Planning Application to An Bord Pleanála in Respect of a Strategic Infrastructure Development
(A proposed Electricity Transmission Development)

Non-Technical Summary

OLDBRIDGE SUBSTATION

Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath

Prepared by

AWN Consulting
October 2020

NON-TECHNICAL SUMMARY

1.0 INTRODUCTION

This Environmental Impact Assessment (EIA) Report has been prepared on behalf of CAP Developments LLC (herein referred as 'the Applicant') to accompany a planning application to An Bord Pleanála (ABP) for the provision of a 110kV GIS Substation, 4 number transformers and Client Control Building within a fenced compound; a 49kVa electrical supply to the 110kV GIS Substation; 2 number dropdown 110kV transmission lines comprising two new masts and underground 110kV transmission lines; and all associated and ancillary development (herein referred as the "Proposed Development") at Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. Figure 1.1 presents the site location.

The wider landholding is subject to an existing permission (MCC ref: LB/191735) for a data storage facility and ancillary development (herein referred as the "Permitted Development") and potential future data centre development (herein referred as the "indicative Masterplan Development")

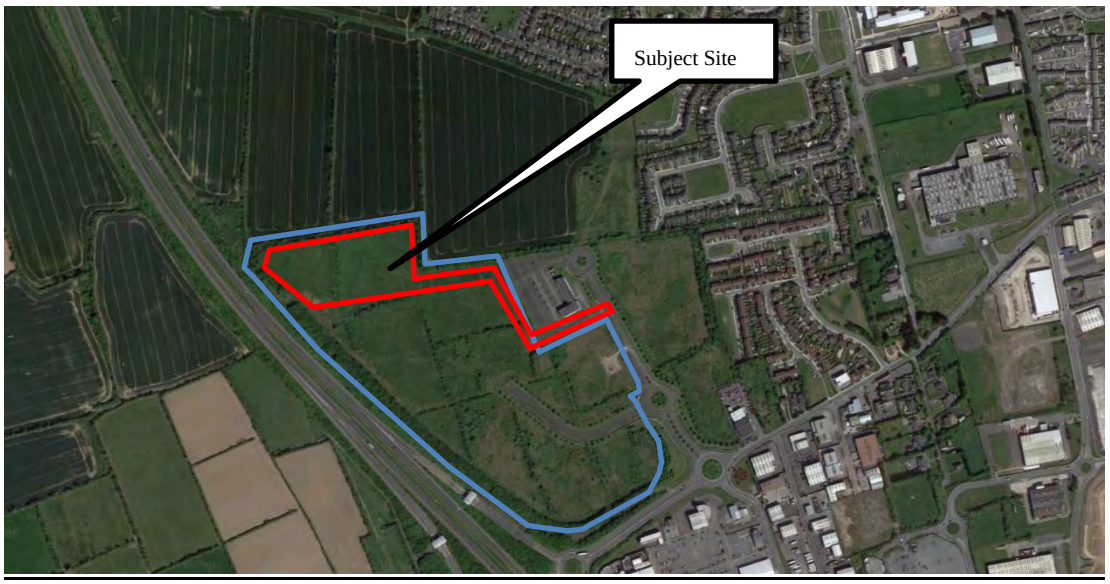

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***Figure 1.1a*:** Subject site outlined in red with wider land holding outlined in blue

Requirement for an EIA

The requirement for EIA for certain types and scales of development is set out in the EIA Directives (2011/92/EU and 2014/52/EU), European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the bulk of which came into operation in September 2018), the European Communities (Environmental Impact Assessment) Regulations 1989-2006, Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001-2017.

It should be noted that this EIA Report is prepared in accordance with the 2011 EIA Directive (2011/92/EU), as amended by the 2014 EIA Directive, the Environmental Protection Agency (EPA) Draft "*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports"* (2017) (herein referred to the as the EPA Draft EIA Report Guidelines 2017) and the EPA Draft *"Advice Notes for Preparing Environmental Impact Statements"* (2015) (herein referred to as the EPA Draft Advice Notes for EIS 2015).

The EIA Directives list those projects for which an EIA is mandatory (Annex I) and those projects for which an EIA may be required (Annex II). With regard to Annex II projects, Member States can choose to apply thresholds or use case by case examination or a combination of both to assess where EIA is required. In Ireland, a combination of both has been applied.

The Proposed Project is not listed under Annex I EIA Directives. However, it exceeds the relevant threshold as set out in the Planning and Development Regulations 2001-2019 for Annex II projects. The threshold for "industrial estate development projects, where the area would exceed 15 hectares" as set out in Part 2 of Schedule 5 of the Regulations was considered to be most relevant threshold in the context of the Proposed Development in the subject location. Although less than the threshold, an EIA Report has been provided as the Proposed Development is required to provide the permanent power supply for the Permitted Development.

The main objective of an EIA, as set out in Article 3(1) of the 2014 EIA Directive, is to identify, describe and assess the direct and indirect significant impacts of a project on population and human health, biodiversity, land, soils, water, air & climate (including noise), material assets, cultural heritage and the landscape and the interaction between the aforementioned factors. The EIA Report reports on the findings of the EIA process to date and informs the Planning Authority, statutory consultees, other interested parties and the public in general about the likely effects of the project on the environment.

A Schedule of Mitigation measures to be implemented as part of the Proposed Development is included in Appendix 1.1 of this EIA Report. An outline Construction Environmental Management Plan (CEMP) is provided with the planning submission. The contractor will be required to refine the CEMP and to operate in compliance with measures outlined in the CEMP.

The Operator

EirGrid will be the transmission system operator (TSO). ESB Networks will be the transmission asset owner (TAO).

Consultation

AWN, the Applicant and the project team have liaised with An Bord Pleanala (ABP) in advance of lodgement of the Proposed Development on August 11th. Previously consultation meetings were held with Meath County Council as part of the application for the Permitted Development in which the Proposed development was presented as part of future infrastructure. on the 23rd October 2019 and 27th November 2019.

AWN and the other respective EIA contributors/authors have incorporated advice and comments received during the above consultations into the relevant chapters of this EIA Report.

Contributors to the EIA Report

The preparation and co-ordination of the EIA Report has been completed by AWN in conjunction with specialist subcontractors. The role and responsibility of each contributor, their qualifications and relevant experience are detailed in Chapter 1 (Introduction) of the EIA Report.

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

Description of the Site

The subject site is a 3.077 hectares and is located within the IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. To the south is the Permitted Development which is currently under construction. The 49kVa ducting will run along the road located to the south of the International Fund Services (Ireland) Limited property. Beyond this, lands are largely defined by medium- to high-density residential uses, with residential developments such as Beechwood and Cedarfield within 200m of the eastern boundaries of the Proposed Development site. North of the Proposed Development is largely defined by agricultural lands, as well as some once-off developments associated with these agricultural holdings. Larger residential developments also exist north of the Proposed Development site, such as residential developments in Tredagh and Riverbank. The Proposed Development area is within the Permitted Development site which is under construction and comprises spoil and bare ground. There is no direct drainage pathways to the River Boyne which flows west-to-east c. 1km north of the site.

Proposed Development Description

The proposed development primarily comprises the provision of a substation compound and associated dropdown 110kV transmission lines, along with associated and ancillary works and is described as follows:

The proposed substation compound is subdivided into two parts. The western part of the compound will accommodate a two storey 110kV GIS substation building (with a gross floor area of c. 1,447 sq.m). The eastern part of the compound will accommodate four transformers and a single storey client control building (with a gross floor area of c. 423 sq.m) and associated underground services. Both parts of the substation compound are enclosed within 2.6 metre high security fencing.

The proposed dropdown 110kV transmission lines will connect the proposed 110kV GIS substation building to existing 110kV overhead transmission lines traversing the subject site to the west of the proposed substation and will comprise the provision of two dropdown masts (c. 16 meters in height) and associated overhead transmission lines, transitioning to underground transmission lines set within ducts that will subsequently progress into the 110kV GIS Substation building, which will in turn connect to the four transformers.

The development includes access paths, landscaping, security fencing, provision of internal access roads and car parking within the GIS substation compound, provision of a 49kVa electricity connection (c. 544 metres in length, connecting to existing electrical services in the main avenue of the Drogheda IDA Business and Technology Park) for the GIS substation building, a unit substation, lightning masts, services, all associated construction works, and all ancillary works.

Figures 2.1 (a) and (b) present an overall site layout plan. Figure 2.1a present the GIS substation, transformer bays and client control building, and Figure 2.1b presents the route of the 49kVA electrical supply.

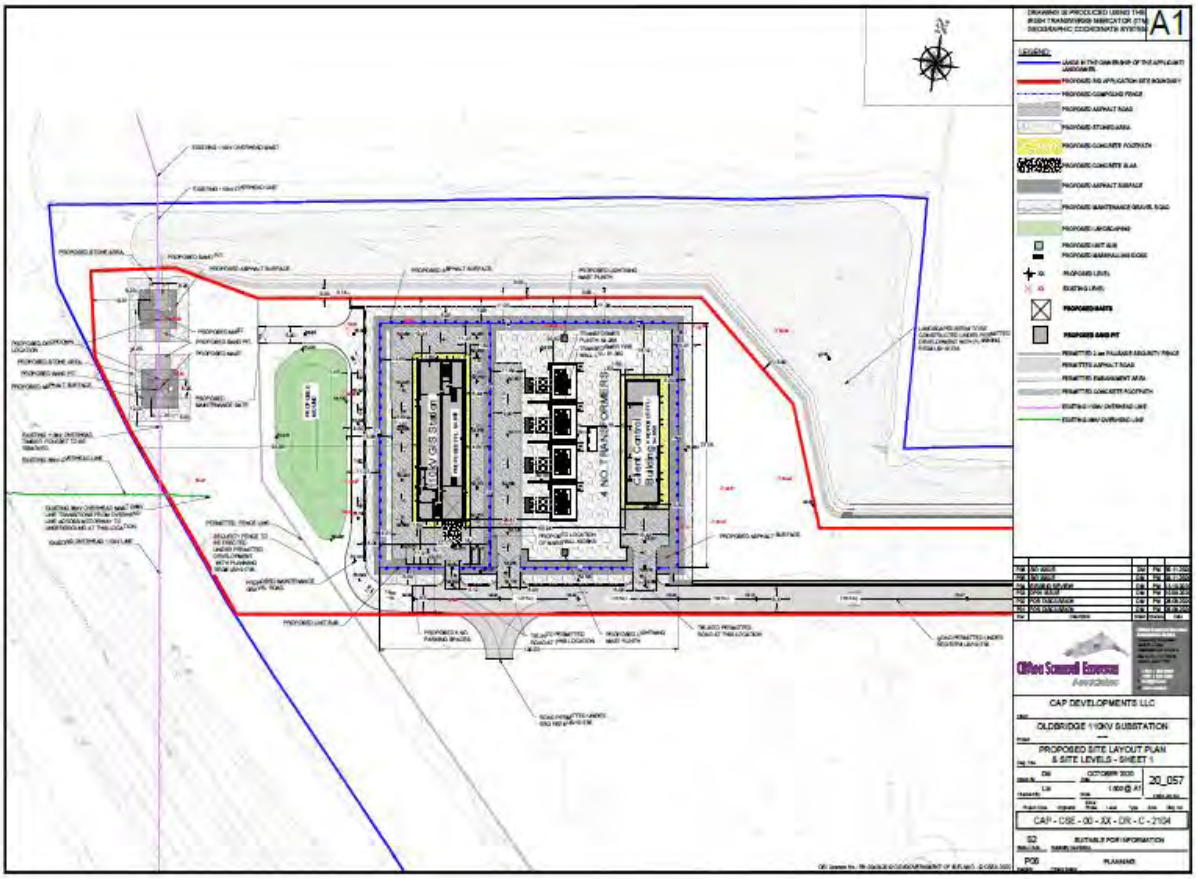

Figure 2.1(a). Site layout plan of the Proposed Development (*Source: MCA)*

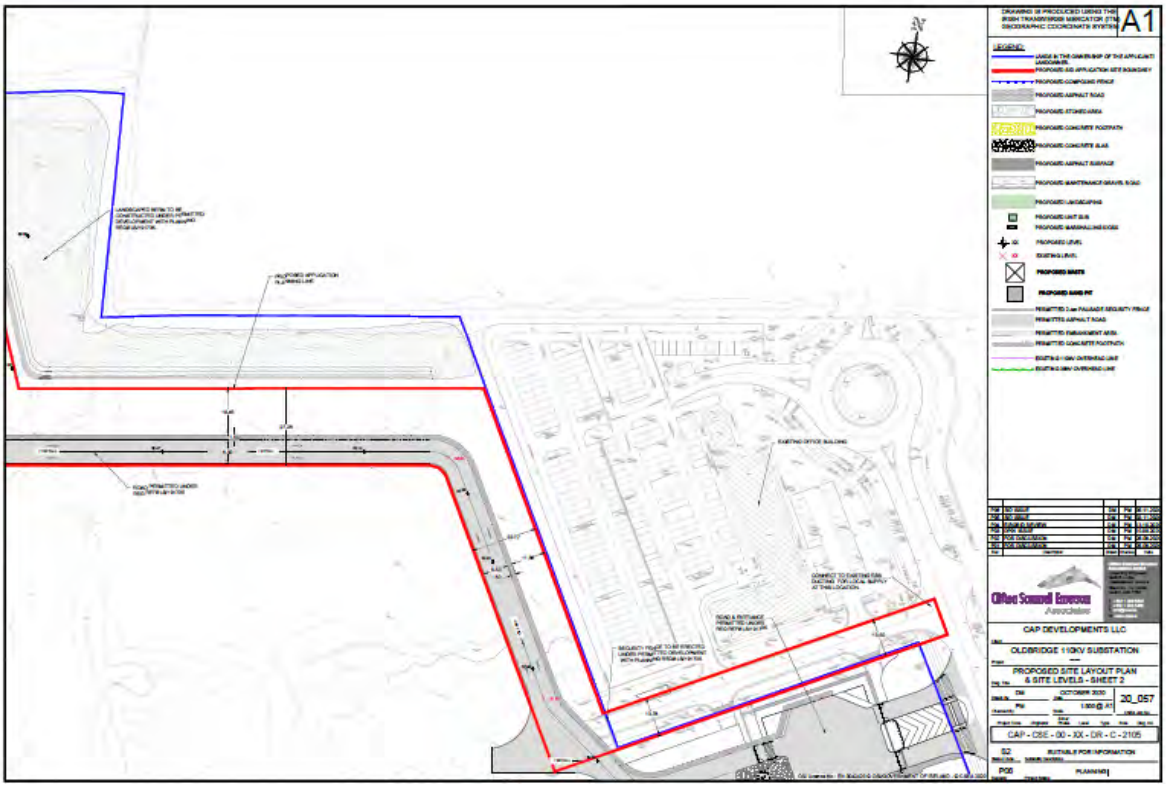

Figure 2.1(b). Site layout plan of the Proposed Development (*Source: MCA)*

Phases of the Project

Under the current EPA Draft EIA Report Guidelines 2017 Draft EPA Guidelines on the information to be contained in EIA Reports, the description of the existence of the project is required to define all aspects of the proposed lifecycle of the Proposed Development under the following headings:

- Construction;
- Commissioning;
- Operation;
- Decommissioning; and
- Description of Other Developments.

Construction

The construction schedule based on receipt of planning is as follows:

- Application for Planning Permission – October 2020
- Commence Site Construction works (subject to grant of planning permission) – Start of Q2 2021
- Completion of Construction and Commissioning – Q3 2021

It is anticipated that the construction of the Proposed Development will be completed during normal construction hours i.e. 7am to 7pm Monday to Friday with a half day working on Saturday (8am -2pm). However, it is possible that the appointed contractors may wish to carry out certain operations outside these hours i.e. evening hours during long summer days etc. Such occurrences will be notified to the local authority, where required and generally kept to a minimum. Where they do occur, contractors will ensure they take place over as short a timeframe as possible and as such are unlikely to cause excessive disturbance.

The total peak construction population on site is estimated to be of the order of c. 30 staff (average 15-20). Site staff will include management, engineers, construction crews, supervisors and indirect staff.

It is proposed that the accesses and haul roads for vehicles, the contractors' compound and fencing that have been established for the construction of the Permitted Development will be utilised for the Proposed Development.

The primary activities that will be required during the site preparation phase for the Proposed Development will be site clearance, excavations and levelling of the site to the necessary base level for construction, surveying and setting out for structures. No rock breaking is required.

A combination of bulldozer, excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects.

It is envisioned that 17,000m^3 of material will be excavated from the site to facilitate construction. Surplus excavated material will be removed from site for offsite reuse, recover and/or disposal at suitably authorised facilities. It is estimated that 4,800m^3 importation of soils/stones will be required to facilitate construction. Contractors will be required to submit and adhere to a method statement (including the necessary risk assessments) and indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

Reinstatement along the 49kVA cable installation route will be as current, i.e. grassed in greenfield areas and hardstand along paved areas and roads.

Landscaping will be undertaken in accordance with the landscape masterplan for the Permitted Development (refer to Chapter 11 Landscape and Visual Impact of this EIA Report).

Commissioning

Once the construction of the Proposed Development is completed, ESB Networks will be mobilised to complete the commissioning. Commissioning will be carried out over a period of months. Commissioning works primarily involve a suitably qualified individual connecting the relevant cables to a switchgear within the substations. Following this, energisation can take place.

As there is no requirement for chemicals usage and minimal access to the route by personnel there is no likely environmental effect as a result of commissioning.

Operation

EirGrid will be the transmission system operator (TSO) and ESB Networks will be the transmission asset owner (TAO). EirGrid will operate transmission stations, including the proposed new GIS substation, remotely from their control centres. However, ESB Networks will carry out all local operations on Eirgrid's behalf.

The ESB Networks will undertake local operational activities from the substations with only interim inspections along the transmission line and MV cable installation.

There are no full-time staff required for operation. However, maintenance of the substation will be required by ESB Networks, including a routine weekly inspection, and a more comprehensive inspection once per year. The weekly inspection of the GIS substation will take a maximum of 8 hours on a single day and will be conducted by up to 2 staff. In addition to the weekly inspections, more comprehensive maintenance works will take place annually on each cubicle. This will require up to 4 staff to conduct testing at the substation over a maximum period of 15 days (120 hours).Traffic relating to staff movements have been assessed as part of the traffic and transportation chapter of this EIA Report (Chapter 13).

Minor volumes of hydrocarbons will be stored within in bunds for transformer oils (36 m^3) and diesel (1 m^3) for an emergency back-up house generator to provide back-up power to the GIS building.

Decommissioning

The lifespan of the Proposed Development is not defined but it is anticipated that it will be maintained, and periodic upgrading undertaken over a long lifetime to meet future demand and upgrade in technology.

If the GIS substation is no longer required over the long term, then full decommissioning in accordance with prevailing best practice will be undertaken. Retirement of any cables will involve decoupling the cable from the switchgear. An excavation pit of approximately 10m^2 will then be established. The cable to be retired will be identified within this excavation pit and spiked (to ensure that decoupling from the switchgear has been successful and the cable is not live). The cable will then be cut and capped to protect the exposed cable. The excavated pit can be reinstated using the excavated material, with no import of fill required. The retired cable can remain in situ in the ground, with the potential for it to be returned to operation should it be required in the future.

Description of other Developments

A list of the other developments the vicinity of the Proposed Development, is provided in Chapter 3 Planning and Alternatives of this EIA Report. The majority of these are relatively small scale apart from the adjacent Permitted Development and Indicative Masterplan Development.

Sustainability, Energy Efficiency and Resource Use

Eirgrid and ESB Networks are committed to running their businesses in the most environmentally friendly way possible. ESB Networks is a subsidiary within ESB Group. The ESB Group has identified energy efficiency as a strategic priority within its Brighter Future strategy. ESB Group is a commercial semi-state-owned company (95% state-owned) and is committed to supporting and being exemplar in the delivery of Ireland's 2020 public sector targets. These targets, outlined in the fourth National Energy Efficiency Action Plan (2017 – 2020) (NEEAP), include an energy efficiency target of 33% for the public sector.

Major Accidents/Disasters

The 2014 EIA Directive and associated Draft EPA EIA Guidelines requires that the vulnerability of the project to major accidents, and/or natural disasters (such as earthquakes, landslides, flooding, sea level rise etc.) is considered in the EIA Report. The site has been assessed in relation to the following external natural disasters; landslides, seismic activity and volcanic activity and sea level rise/flooding as outlined below. The potential for major accidents to occur at the data storage facility has also been considered with reference to Seveso/COMAH.

Landslides, Seismic Activity and Volcanic Activity

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity. Further detail is provided in Chapter 5 Land, Soils, Geology & Hydrogeology.

Flooding/Sea Level Rise

The potential risk of flooding on the site was also assessed. A Stage 1 Flood Risk Assessment was carried out and it was concluded that the development is not at risk of flooding. Furthermore, it is not expected that the Proposed Development would adversely impact on flood risk for other neighbouring properties. Further detail is provided in Chapter 6 Hydrology and Appendix 6.2 Stage 1 Flood Risk Assessment.

Seveso/COMAH

The Proposed Development will not be a Seveso/COMAH facility. The only substance stored on site controlled under Seveso/COMAH will be diesel for generators and the amounts proposed do not exceed the relevant thresholds of the Seveso directive.

Minor Accidents/Leaks

There is a potential impact on the receiving environment as a result of minor accidents/leaks of fuel/oils during the construction and operational phases. However, the implementation of the mitigation measures set out in Chapters 6 and 7 will ensure the risk of minor accidents/leaks of fuel/oils is low and that the residual effect on the environment is imperceptible.

3.0 PLANNING AND DEVELOPMENT CONTEXT

Following consultation with An Bord Pleanála (ABP) it was confirmed that the Proposed Development meets the relevant criteria and constitutes a Strategic Infrastructure Development (SID) under Section 182A & 182B of the Planning and Development Act 2000 (as amended).

The site for the Proposed Development is situated within the administrative area of MCC, and therefore the Planning and Development Framework with which the Proposed Development complies is defined by the Meath County Development Plan 2013 – 2019.

The MCC Planning Department and Louth County Council (LCC) Planning Department websites were consulted in order to generate a list of granted planning permissions from the areas surrounding the Proposed Development site within the previous five years. These lists are presented in Appendices 3.1 and 3.2 of Chapter 3 of the EIA Report. The site-specific planning history includes the planning history for the IDA Business and Technology Park.

The Proposed Development is designed to support the power demand of the Permitted Development (Meath County Council Reg. Ref LB/191735) and to serve the power needs of the indicative Masterplan Development on the overall landholding of c 19.46 hectares within the Drogheda IDA Business and Technology Park.

Chapter 3 of the EIA Report concludes that the Proposed Development will be in keeping with all of the aspects of the relevant policy documents and will deliver a key piece of supporting infrastructure. The Proposed Development will be situated on suitably zoned lands in the Drogheda area.

The policies and objectives of MCC regarding the conservation, protection and enhancement of environmental resources and assets of the region will not be contravened by this Proposed Development, as will be described in the relevant chapters in this EIA Report.

4.0 ALTERNATIVES

EIA legislation and the prevailing EPA Draft Guidelines (August 2017) and best practice require that EIA Reports consider ‘alternatives’ for projects with regard to their environmental effects addressing the do nothing alternative and consideration of alternatives

The wider landholding is subject to an existing permission (MCC ref: LB/191735) for a data storage facility and ancillary development (the “Permitted Development”). A 6 MVA unit substation and associated 6MVA (10kV) electricity connection are in place to support interim power demand for the Permitted Development.

In the event that the Proposed Development does not proceed (I.E THE do nothing scenario), further development of additional data storage facilities on this site would be left without adequate permanent power supply. There are no environmental effects associated with the do-nothing scenario.

The assessment of the alternative routes for the 110kV transmission line considered four route options (presented in Figure 4.1 of Chapter 4 of this EIA Report).

Option 1 – Red route along the M1 -Length 2.2 km.
Option 2 – Blue route along the Slane road, and Donore road, Length 5.8 km
Option 3 – Yellow route - along the Slane, Rathmullen and Donore roads–Length 4.9 km
Option 4 – Green route – drops down from existing overhead line at the Proposed Development site – Length 0.31 km

Option 4 was deemed to be the most suitable based on having the lowest potential temporary environmental effects during construction as a result of its shorter length and distance from environmental (in particular the Boyne (SAC and SPA)) and human receptors. All route options were concluded as having a longterm neutral and *imperceptible* impact on the environment during operation.

The proposed GIS substation is designed based on requirements stipulated by the Operator. The design of the substation units is centred around the equipment requirements of the Operator that are required to provide an efficient and safe service. From a "design and layout" point of view, therefore, the flexibility to select alternative designs and layouts was not available to the Applicant.

In terms of the proposed processes, the proposed GIS substation and new cable bays will employ the same electricity generation and transmission processes that are used by the Operator at their other facilities in Ireland and represents the most up-to-date and state of the art processes currently available. As appropriate, alternative processes are considered on an ongoing basis by the Operator as a part of each of their operations based on many factors including technical feasibility, environmental impact, efficiency, security, reliability and cost. Therefore, from a "process design" point of view, the flexibility to select alternative processes for integrating into the current national grid is not available to the Applicant.

In conclusion, it is considered that the Proposed Development and design is the most suitable choice to provide the support required to meet the power requirements of the Permitted Development and potential future indicative Masterplan Development.

5.0 POPULATION AND HUMAN HEALTH

This chapter evaluates the impacts if any, of the Proposed Development on population and human health. In accordance with the Draft EPA EIA Report Guidance (2017), this chapter has considered the *"existence, activities and health of people"* with respect to *"topics which are manifested in the environment such as employment and housing areas, amenities, extended infrastructure or resource utilisation and associated emissions"*.

This chapter also follows European Commission guidelines (2017; *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report*) and examines the health effects relevant to the Proposed Development as they relate to a relevant, defined study area. The effects of the Proposed Development on the population and human health are analysed in compliance with the requirements of the EPA Draft EIA Report Guidelines 2017.

Issues examined in this chapter include demography, population, employment, social infrastructure, landscape, amenity and tourism, natural resources, air quality, noise and vibration, material assets, traffic and health and safety.

Impact Assessment

It is predicted that there will be a very slight positive impact on local business activity during the construction phase with the increased presence of up to 30 no. construction workers using local facilities. The positive impact during the operational phase will be less with c. 2 staff on site at any given time for maintenance works.

The best practice dust mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the Proposed Development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the Proposed Development in relation to dust is likely to be short-term and imperceptible with respect to human health. The proposed cables will be underground and will have no impact air quality in relation to human health once operational. In addition, the proposed substation does not have the potential for any emissions which could impact air quality in terms of human health during operation.

There will be some impact on nearby noise sensitive properties due to noise emissions from site activity and traffic. The application of noise limits and limits on the hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum. In addition, due to the distance between the site and the nearest sensitive locations, vibration impacts generated during construction are expected to be negligible. Therefore, the noise and vibration impact of the construction phase of the Proposed Development is likely to be temporary to short term and slight negative with respect to human health because of the temporary to short-term construction phase. The operation of the Proposed Development has negligible noise impacts. The cumulative noise impacts of the Proposed Development and the Permitted Development have been assessed in Chapter 10. The resultant noise impact is negative, not significant and long-term. The Proposed Development will not generate any perceptible levels of vibration during operation and will have a negligible significance of effect with respect to human health. Therefore, there will be no impact from vibrations on human health.

The location of the Proposed Development within an industrial park area, adjacent to a national motorway and in close proximity to developed retail parks will have a minimal impact on the local landscape amenity.

The traffic assessment shows that the additional traffic movements associated with the Proposed Development were found to be short-term, negative and not significant for the construction phase and long-term, neutral and imperceptible for the operational phase.

The Proposed Development has the potential for an impact on the health and safety of workers employed on the site, particularly during the construction phase. The activities of contractors during the construction phase will carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) to minimize the likelihood of any impacts on worker's health and safety. During the operational phase of the development, the operator will implement an Environmental Safety and Health Management System and associated procedures at the facilities.

Mitigation measures proposed to minimise the potential impacts on human health in terms of air quality and climate and noise and vibration are discussed in Chapters 9 and 10 of the EIA Report, respectively. Mitigation measures to reduce the impact of additional traffic movements to and from the development are set out in Chapter 13 of the EIA Report.

Overall, it is expected that the Proposed Development will have a *positive* and *long-term* impact on the immediate hinterland through continued employment opportunities and the associated economic and social benefits.

6.0 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

This chapter of the EIA Report assesses and evaluates the potential impacts of the Proposed Development on the land, soils, geological and hydrogeological environment.

The limestone aquifer (Regionally Important karstified aquifer) which underlies the site is overlain by low permeability clays which provides natural protection to the underlying aquifer. A site investigation in 2020 confirmed that the depth to bedrock is > 15 metres below lands surface. The aquifer vulnerability following GSI guidelines is designated as having a "Low" aquifer vulnerability.

The Groundwater Body (GWB) underlying the site is the Drogheda GWB (EU Groundwater Body Code: IE_EA_G_008). Currently, the EPA (2019) classifies the Drogheda GWB as *under review*. However, the GWBs to the north and south of this currently are projected as "At Risk" i.e. at risk of not achieving good status

Based on the National Roads Authority (NRA)/Institute of Geologists of Ireland (IGI) criteria for rating the importance of hydrogeological features (refer to Appendix 6.2), the importance of the hydrogeological features at this site is rated as *High Importance*. This is based on the assessment that the attribute has a high-quality significance or value on a local scale. The aquifer underlying the proposed site is a karstified Regionally Important bedrock aquifer, used for public water supply or generally for potable use.

Subsoil stripping and localised stockpiling of soil will be required during construction. The importation of engineering fill will be required to facilitate construction. The project engineers, CSEA, have estimated that the importation of up to 4800m^3 of fill material and exportation of 17000 m^3 will be required

The potential for impact on soil and water is low based on assessment of the potential impacts during construction and operation. Mitigation measures have been identified to further minimise risk of impact further and are included in the Construction Environmental Management Plan (CEMP) for the Proposed Development. Mitigation measures include;

- Management of run-off waters containing suspended solids to ensure adequate settlement of solids and appropriate earthwork handling protocol.
- All fill and aggregate will be sourced from reputable suppliers.
- All fuel tanks shall be stored in designated areas, and bunded to a volume of 110% of the capacity of the tank within the bund (plus an allowance of 30 mm for rainwater ingress). Refuelling of construction vehicles and the

addition of hydraulic oils or lubricants to vehicles, will take place in a designated area which will be away from surface water gulley's or drains.

- It is unlikely that contaminated material will be encountered during construction of the Proposed Development based on site investigation data. Nonetheless, excavation works will be carefully monitored by a suitably qualified person to ensure that potentially contaminated soil is identified and segregated from clean/inert soil. In the unlikely event that potentially contaminated soils are encountered, they should be segregated, tested and classified as hazardous or non-hazardous in accordance with the EPA Guidance Document: *Waste Classification – List of Waste and Determining if Waste is Hazardous or Non-Hazardous* (2015) and *Council Decision 2003/33/EC*. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility.

Following implementation of mitigation measures detailed in Chapter 6 of the EIA Report and the CEMP, the predicted impact during construction of the Proposed Development will be short-term, imperceptible and neutral.

During the operational phase, there are limited activities that could potentially impact on the land soils, geological and hydrogeological environment. There is a small potential for leaks from the minor fuel storage for transformers and back-up generator to occur on site. However, the volumes stored is small and tanks are bunded and on hardstand areas. In addition to this there is a potential for leaks and spillages from the small number of vehicles which enter this area. Any accidental emissions of oil, petrol or diesel will likely discharge to sewer as located on hardstand and the potential for discharge to ground is low. The underlying aquifer is well protected by low permeability clay and hardstand.

The land is zoned for high technology development and located within an IDA Park. There is no loss of agricultural land as a result of the Proposed Development. The predicted impact on lands soils geology and hydrogeology during operation of the Proposed Development, following implementation of mitigation measures detailed in Chapter 6 of the EIA Report will be long-term, imperceptible and neutral.

7.0 HYDROLOGY

This chapter of the EIA Report assesses and evaluates the potential impacts of the Proposed Development on the surrounding water & hydrological environment. There are no streams on the site itself or along its boundaries and no direct pathway to the River Boyne (estuary) and its tributaries, which are located c. 1 km north of the site.

There are two water quality monitoring station located upstream of the Boyne Estuary, The Old Bridge (RS07B042200) and the New Bridge (RS07M010300) both obtained a Q4 - Good WFD status (in 2018 and 2006 respectively). The Boyne Estuary to the north currently has a rating of 1a, '*At risk of not achieving good status'.*

Based on the NRA methodology (refer to Appendix 7.1), for rating the importance of hydrological features, the importance of the hydrological features at this site is rated as medium importance. This is based on the assessment that the attribute has a medium-quality significance or value on a local scale. The Boyne Estuary is the receiving waterbody for the site, it is not a source of local potable water, and is not widely used as a local water amenity in this area due to the industrial nature of the nearby Drogheda port.

The potential risk of flooding on the site was also assessed. A Stage 1 Flood Risk Assessment was completed for the site (Appendix 7.2 of the EIA Report). The assessment identified no flood hazards for the Proposed Development. The development resides within Flood Zone C and is not at risk of flooding from a 1% or 0.1% Annual Exceedance Potential (AEP) event.

The Proposed Development will require site preparation, excavations and levelling for foundations, car parks and a c c e s s roads, for the installation of services and landscaping. The potential impacts of construction and mitigation measures proposed have been identified and are included in the CEMP for the Proposed Development. The mitigation measures are as outlined in section 6 above.

As there is no direct pathway to surface water from this site there is no likely potential impact on offsite watercourses. Some removal of perched rainwater from the excavation may be required. Volumes will be quite low, and all pumped water will be subject to onsite settlement before release.

The implementation of mitigation measures detailed in Chapter 7 of the EIA Report will ensure that the potential impacts on the surface water environment do not occur during the construction phase and that the residual impact will be short-term-imperceptible- neutral.

During operation, drainage form the fuel bund for the transformers will be to the foul sewer. During the operational phase, there is a low potential for contamination of stormwater run-off and no direct pathway to a river. The discharge to foul sewer is minimal as no full-time staff using the facility. The discharge to stormwater and foul sewer discharge was allowed for in the design of the Permitted Development drainage infrastructure. This infrastructure incorporates attenuation and interceptors, ensuring that there is no potential for any off-site impact as a result of the development,

The implementation of mitigation measures highlighted in Chapter 7 will ensure protection of the surface water environment during the operational phase and that the predicted impact will be long-term-imperceptible- neutral.

8.0 BIODIVERSITY

This chapter provides an assessment of the impacts of the proposed development in question on the ecological environment, i.e. flora and fauna.

The Proposed Development area is under construction and comprises spoil and bare ground.

There are no rare or protected habitats recorded in the study area. The site may be considered of Low Local Ecological Value. There are no predicted significant effects on local ecology.

None of the qualifying habitats or species of the European sites considered in the potential zone of impact occur under the footprint of the proposed works areas.

There is no connectivity with the River Boyne. There will be no direct or indirect effects on the European sites associated with the River Boyne.

The Proposed Development will have no predicted effects on European sites or on local ecology, therefore cumulative impacts can be ruled out.

The implementation of standard mitigation measures highlighted in Chapter 8 will ensure that protection of biodiversity in the surrounding environment.

The Proposed Development is located in an area of low local ecological value and, as such, is predicted to have a neutral and imperceptible effect on biodiversity.

9.0 AIR QUALITY AND CLIMATE

This chapter evaluates the impacts which the Proposed Development may have on air quality & climate.

Air Quality

In terms of the existing air quality environment, data available from similar environments indicates that levels of particulate matter less than 10 microns and particulate matter less than 2.5 microns (PM_{10}/$PM_{2.5}$) are, generally, well within the National and European Union (EU) ambient air quality standards.

An assessment of the potential dust impacts as a result of the construction phase of the proposed development was carried out based on the UK Institute of Air Quality Management (IAQM) guidance. This established the sensitivity of the area to impacts from construction dust in terms of dust soiling of property and human health effects. The sensitivity of the area was combined with the dust emission magnitude for the site under three distinct categories: earthworks, construction and trackout (movement of vehicles) in order to determine the mitigation measures necessary to avoid significant dust impacts.

A dust minimisation plan will be implemented during the construction phase of the proposed development to ensure that no significant dust nuisance occurs outside the site boundary, measures include the development of a documented system for managing site practices with regard to dust control, monitoring and assessment of dust. No mitigation is required during operation.

Once mitigation measures, such as dust and traffic management, are implemented the impacts to air quality during the construction of the proposed development are considered, short-term and not significant, posing no nuisance at nearby sensitive receptors (such as local residences).

During operation as there is only one back up generator (< 1MW) and minimal traffic the potential impacts to air quality during the operational phase is longterm and imperceptible.

Climate

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with European Union's Effort Sharing Decision "EU 2020 Strategy" (Decision 406/2009/EC). The EPA state that Ireland had total GHG emissions of 60.93 Mt CO_2eq in 2018. This is 5.59 Mt CO_2eq higher than Ireland's annual target for emissions in 2018. Emissions are predicted to continue to exceed the targets in future years, therefore, reduction

measures are required in all sectors.

Based on the scale and temporary nature of the construction works, the potential impact on climate change and transboundary pollution from the construction of the proposed development is deemed to be temporary and not significant in relation to Ireland's obligations under the EU 2020 target. There is no impact during operation as there are no significant emissions from the proposed development.

If the mitigation measures outlined in this assessment are implemented, there will be no residual impacts of significance on air quality or climate from the construction or operational phases of the Proposed Development.

10.0 NOISE AND VIBRATION

This chapter assesses the anticipated noise and vibration impact associated with the Proposed Development at nearby noise sensitive locations.

The existing noise climate has been surveyed at nearby noise sensitive receptors over the course of typical day and night-time periods. Road traffic movements, both distant and local, were noted as the most significant source of noise during both daytime and night-time periods.

When considering a development of this nature, the potential noise and vibration impact on the surroundings must be considered for each of two distinct stages: the short-term impact of the construction phase and the longer-term impact of the operational phase.

During the construction phase of the proposed development there will be some impact on nearby noise sensitive properties due to noise emissions from site activity and traffic. The application of noise limits and limits on the hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum. The resultant impact is slight, negative and temporary.

In relation to the operational phase it is concluded that there will be no significant noise emissions from the operation of the cable installations or 220kV substation and associated cable bays. The resultant vibration impact is imperceptible, not significant and long- term.

No significant sources of vibration will be present during the operational phase. There are therefore no predicted vibration impacts at neighbouring dwellings during the operational phase. The resultant vibration impact is imperceptible, neutral and long- term.

The cumulative noise impacts of the Proposed Development and the Permitted Development have been assessed including modelling in the Chapter 10 assessment. The resultant noise impact is negative, not significant and long-term.

There are no operational vibration impacts associated with the Proposed Development or the Permitted Development, hence cumulative impacts do not arise in this instance.

11.0 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

This chapter assesses the predicted impacts of the Proposed Development on archaeological, architectural and cultural heritage using a number of sources including the Record of Monuments and Place, the National Inventory of Architectural Heritage, the topographical files of the National Museum of Ireland, the Excavations Database, cartographic and documentary sources.

There are no impacts on recorded archaeological, architectural or cultural heritage sites associated with the Proposed Development and no sites of archaeological potential were noted during the field survey. Substantial sub-surface archaeological features have been identified within the site boundary through geophysical survey, archaeological testing and detailed topsoil stripping and assessment.

A comprehensive programme of archaeological excavation commenced on site in March 2020, under licence from the National Monuments Service (License no. 20E0082). The following programme of works is being implemented:

- A suitably qualified archaeological consultant (CRDS Ltd) has been appointed to oversee the works and undertake the required archaeological excavations, monitoring and reporting;
- A suitably qualified archaeological contractor (IAC Ltd) has been appointed to undertake the archaeological excavations;
- Topsoil stripping and assessment of Areas 1, 2 & 4 have been completed and a method statement agreed with the National Monuments Service for the excavation of these features.
- Excavation commenced in May 2020 and is on-going, with an anticipated completion date for site works of November 2020.

The results of the excavation will serve to preserve the archaeological findings by records, and a full report outlining the results will be submitted to the National Monuments Service and to the relevant authorities.

12.0 LANDSCAPE AND VISUAL

The Proposed Development site is located at the south western environs of Drogheda town and is in the north western part of a partially developed IDA Business and Technology Park and within the site development area of the Permitted Development within the IDA Business and Technology Park. The Permitted Development is currently under construction.

The overall IDA lands have strong and established landscape screening along their southern, western and northern boundaries. The eastern part of the IDA lands is undeveloped and adjoins residential developments where boundaries comprise combinations of walls, earthen mounds, and tree and hedge planting. Visibility between the residential areas and the IDA lands varies, with some areas fully screened, and others partially screened.

The IDA lands are accessed from the Donore Road via a distinctive and structured landscape entrance area that leads to a main avenue running northwards through the middle of the overall lands and is also strongly landscaped along both sides. The

Permitted Development is currently under construction and occupies the western half of the overall IDA lands, between the main avenue and the adjoining motorway.

The wider site setting, west of the site and motorway, and to the north and south of Drogheda town, is of rolling agricultural landscape, with the River Boyne flowing from west to east through Drogheda town. The Boyne Valley is a landscape of high quality and high sensitivity, not least for its natural landscape, but also for the megalithic passage tombs of Newgrange, Knowth and Dowth, and the cultural heritage of the Battle of the Boyne at Oldbridge. A ridge of high ground at Red Mountain and Donore Hill is located between the development site and Brú na Bóinne, obstructing visibility between these areas.

The Proposed Development comprises a GIS Substation, transformers, and a Client Control Building set within a secure marshalling compound, as well as two new masts adjacent to the motorway which will provide a drop down connection to and from the existing 110kV grid infrastructure.

As the Proposed Development is to be located within the north western corner of the indicative Masterplan Development, it will also be more remote from potentially sensitive receptors. Furthermore, it will benefit from the established strong perimeter woodland screening along the western and norther site boundaries, and also from additional northern site landscaping that will be delivered as part of the Permitted Development.

Given the overall site layout, including the Permitted Development that is under construction, potential visibility of the Proposed Development will be substantially limited to vantage points that are north of the development site.

Such views will be relative distant, and will, by virtue of the rolling agricultural character of the landscape to the north, be generally only intermittent and partial glimpse views.

Importantly, by virtue of the intervening ridgeline at Red Mountain and Donore, the development will not be visible from the area of the passage tombs at Brú na Bóinne or from the Battle of the Boyne at Oldbridge.

The landscape and visual impact of the development, during construction and upon completion and commissioning, will vary from not significant to slight and from neutral to negative. A series of photomontages have been prepared from representative locations and are included in *Appendix 12.1* of the EIAR.

Mitigation of potential landscape and visual effects of the Proposed Development is achieved primarily through site layout and planning, and by locating the Proposed Developed within a localised corner of the overall development site and benefiting from the existing perimeter woodland screening along the western and northern boundaries, and by the southern and eastern site boundaries facing directly into the site area of the Permitted Development. Additionally, the larger built elements will be finished using the same palette of materials as will be applied to the Permitted Development.

By virtue of its location within the overall development site area, and by sharing the main entrance and parts of the internal access road network associated with the permitted development, the Proposed Development will not alter the distinctive entrance and main avenue landscaping of the IDA Business and Technology Park.

The lands are zoned for high technology development as proposed and the scheme provides for an appropriate response to the permitted land use.

13.0 TRAFFIC AND TRANSPORTATION

This chapter assesses the traffic impact that the Proposed Development will have on the surrounding road network during construction and operation.

The intended site for the Proposed Development is located in the Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. The site is bound to the east by an existing estate road (IDA Business and Technology Park Access Road), to the west by the M1 Motorway, to the north by undeveloped lands, and to the south by an emergency access road and Donore Road.

The surrounding road network in the vicinity of the site includes the IDA Business and Technology Park Access Road, Donore Road, Rathmullen Park and the M1.

The site is currently serviced by Bus and Rail. Bus Eireann services 101X, and 163 and Matthews services 901, 901D, and 904 stop on Donore Road, at a point approximately 270 metres east of its roundabout junction with IDA Business and Technology Park Access Road (i.e. approximately 550m from the site access to the Proposed Development). The nearest railway station to the Proposed Development is Drogheda, located circa 3km east of the Proposed Development.

The potential impact of the Proposed Development has been considered for both the construction and operational stages based on Transport Infrastructure Ireland (TII) guidelines set out in the Traffic & Transport Assessment Guidelines (2014).

A number of traffic surveys were carried out on the local road network in October 2019, which were factored up in accordance with TII Project Appraisal Guidelines – Unit 5.3: Travel Demand Projections (2016) to establish opening (2023) and Horizon (2038) year traffic flows in the area.

Following this step, and in order to establish baseline (do-nothing) flows, further adjustments were made to these flows to account for approved surrounding development in the area not accounted for in the surveys. These adjustments also took into consideration the traffic associated with the Permitted Development under MCC *Reg. Ref: LB/191735* to be delivered with the proposed 110kV GIS Substation.

The trip generation of the Proposed Development during the construction stage was estimated based on construction traffic recorded at a similar 110kV GIS Substation facility. The construction staging for the Proposed Development will be such that the worst-case construction impact will occur in Q4 2020, when the permitted development under *MCC Reg. Ref: LB/191735* is at peak construction.

Therefore, the worst-case construction traffic impact for the Proposed Development has been assessed for Q4 2020. The impact of the construction phase of the development was found to be short-term, negative and not significant during peak construction.

During the operational stage, the 110kV GIS substation does not require any full-time staff to operate it in the daily basis. However, maintenance of the substation will be required, including a routine weekly inspection, and a more comprehensive inspection once per year. The worse case scenario during the operational phase has been assumed to happen during the yearly maintenance inspection.

The traffic generated by the Proposed Development was distributed throughout the nearby network to assess the impacts at relevant junctions in vicinity to the site. The traffic impact of the Proposed Development was estimated as a percentage increase at these junctions for 2023 (opening year) and 2038 (horizon year).

The traffic impact of the operational phase of the Proposed Development was found to be long-term, neutral and imperceptible.

14.0 MATERIAL ASSETS

This chapter of the EIA Report evaluates the impacts, if any, which the Proposed Development may have on Material Assets. The Draft EPA EIA Guidelines (2017) state that material assets are now taken to mean built services and infrastructure, roads and traffic and waste management. The Draft EPA Advice notes also give the following examples of material assets; assimilative capacity of air, ownership and access and tourism. In the EIA Report, the impacts on the various material assets described above have been considered in the following chapters of this EIA Report as follows:

- Chapter 5 Population and Human Health;
- Chapter 9 Air Quality & Climate;
- Chapter 13 Traffic & Transportation; and
- Chapter 15 Waste Management.

Ownership and Access
The site of the proposed development is owned by the IDA Ireland (IDA) and CAP developments LLS. A letter of consent is included with the planning application.

The main site access is along the eastern boundary of the site. It forms a t-junction with the IDA Business and Technology Park access road, at a point approximately 260 metres north of Donore Road. The IDA Business and Technology Park access road, in turn, connects to Donore Road at its roundabout junction with Donore Road and the Drogheda Retail Park access road. The site will be fully secured with a high security fence, CCTV and surveillance systems

Power and Electrical Supply
An existing 110kV overhead power lines crosses the Proposed Development site in the northwest corner. The Proposed Development includes for drop down masts to connect these to the proposed GIS substation development which is proposed to serve the Permitted Development and Indicative Masterplan Development.

Surface Water, Wastewater and Water Supply Infrastructure
The water and wastewater infrastructure for the Proposed Development has been taken into account in the design of the Permitted Development and approval by Irish Water for connection. The overall design incorporates runoff control in the form of attenuation and flow control device, which will restrict discharge from the development at a controlled rate of 39.07l/s which is the equivalent greenfield runoff rate. This infrastructure includes full retention and bypass interceptors and a hydrodynamic solid separator which will be used to remove hydrocarbons and rubbish, debris and sediment from the surface water runoff before it enters the attenuation basin. The attenuated storm water will be discharged offsite to the existing IDA surface water system, via the surface water drainage network for the Permitted Development.

15.0 WASTE MANAGEMENT

This chapter has been prepared to address the issues associated with waste management during the construction and operational phases of the Proposed Development.

An assessment was carried out of the potential impacts associated with resource consumption and waste management during the construction and operational phases of the Proposed Development. The receiving environment is largely defined by MCC as the local authority responsible for setting and administering waste management activities in the area through regional and development zone-specific policies and regulations.

During the construction phase, typical construction waste materials will be generated which will be source segregated on-site into appropriate skips/containers and removed from site by suitably permitted waste contractors to authorized waste facilities. Where possible, materials will be reused on-site to minimize raw material consumption. Source segregation of waste materials will improve the re-use opportunities of recyclable materials off-site. Construction of foundations and services will require the excavation and removal of c. 17,000m^3 of material for offsite reuse, recovery and/or disposal at a suitably authorised facility. There has been no evidence of residual contamination on the site to date and therefore it is anticipated that excavated soils/stones will be clean/inert material suitable for re-use, recovery and/or disposal offsite.

A carefully planned approach to waste management and adherence to the site-specific Construction and Demolition Waste Management Plan during the construction phase will ensure that the effect on the environment will be short-term, neutral and imperceptible.

Dedicated areas have been allocated for storage of waste materials generated during the operational phase of the development. This waste will be generated from the building staff and will comprise of typical commercial waste types. The waste storage areas have been allocated to ensure a convenient and efficient management strategy with source segregation a priority. Waste will be collected from the waste storage areas by permitted waste contractors and removed off-site for re-use, recycling, recovery or disposal.

Provided the mitigation measures outlined in Chapter 15 are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be long-term, neutral and imperceptible.

16.0 CUMULATIVE IMPACTS

This chapter of the EIA Report considers the potential cumulative impacts on the environment of the Proposed Development with the Permitted Development and indicative Masterplan Development on the site and the cumulative impacts with developments in the locality.

The potential cumulative impacts are assessed for each environmental aspect and the predicted impact for each aspect for each scenario is described in Chapter 16 of the EIA Report. With the implementation of mitigation measures for each

environmental aspect and operation of developments in compliance with legislative requirements and the CEMP, it is predicted that there will be no significant long-term cumulative effects.

17.0 INTERACTIONS – INTERRELATIONSHIPS BETWEEN THE ASPECTS

This chapter of the EIA Report addresses potential interactions and inter-relationships between the environmental factors discussed in the preceding chapters. This covers both the construction and operational phase of the Proposed Development.

In the main, the majority of EIA Report chapters assess potential interactions between environmental aspects however this section presents a summary and assessment of the identified interactions. The majority of interactions are found to have a neutral impact on the environment.

Planning Application to An Bord Pleanála in Respect of a Strategic Infrastructure Development
(A proposed Electricity Transmission Development)

OLDBRIDGE SUBSTATION

Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath

Prepared by

AWN Consulting
October 2020

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1.0 INTRODUCTION

1.1 PROPOSED DEVELOPMENT

This Environmental Impact Assessment (EIA) Report has been prepared on behalf of CAP Developments LLC (herein referred as 'the Applicant') to accompany a planning application to An Bord Pleanála (ABP) for the provision of a 110kV GIS Substation, 4 number transformers and Client Control Building within a fenced compound; a 49kVa electrical supply to the 110kV GIS Substation; 2 number dropdown 110kV transmission lines comprising two new masts and underground 110kV transmission lines; and all associated and ancillary development at Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. Figure 1.1 presents the site location.

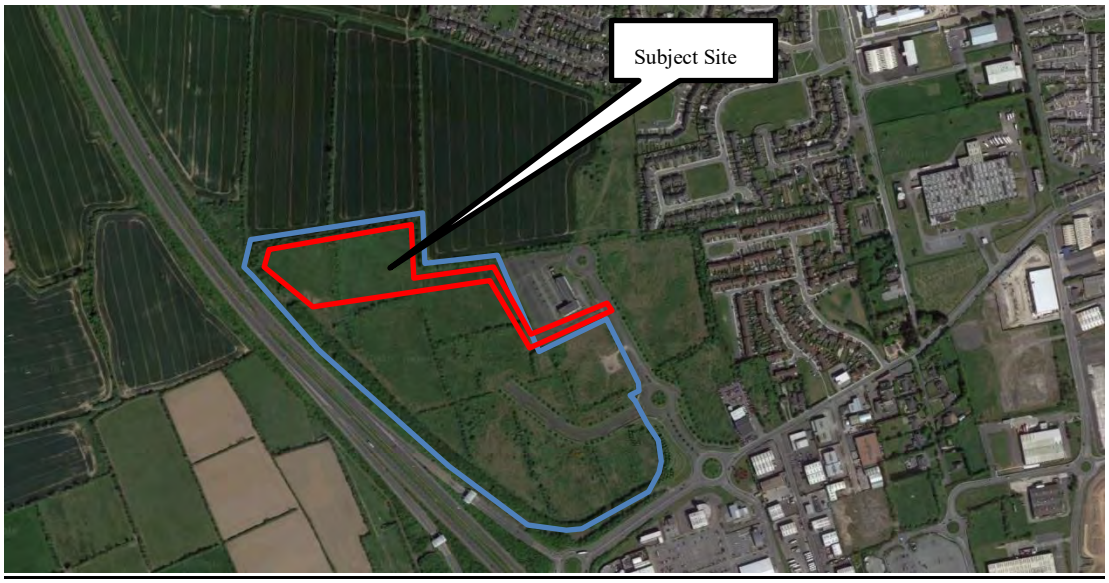

***Figure 1.1a*:** Subject site outlined in red with wider land holding outlined in blue

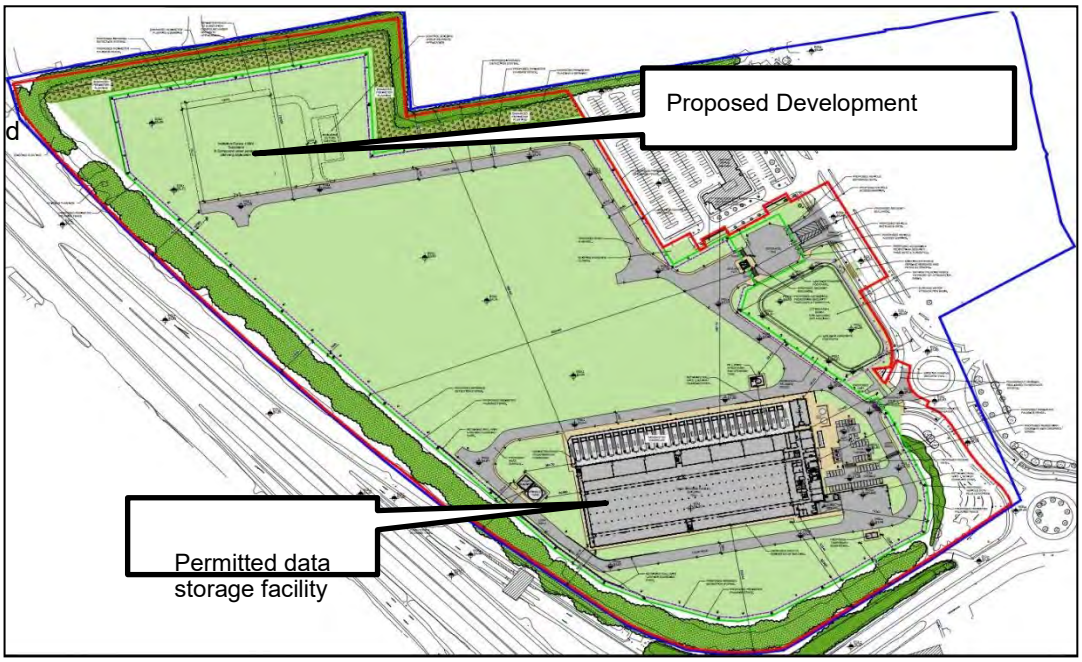

Figure 1.1b: Extract of MCA Architects Site Layout Plan – Reg. Ref.: LB/191735

This development will hereafter be referred to as the 'Proposed Development'. A full description of the development is provided in Chapter 2 (Description of the Proposed Development).

EirGrid will be the transmission system operator (TSO). ESB Networks will be the transmission asset owner (TAO). (The company background and roles of the TSO and TAO are summarised in Section 1.3).

The Proposed Development was assessed cumulatively (as a potential future development that would be subject to a separate planning application and separate Environmental Impact Assessment) as part of the Environmental Impact Assessment (EIA) undertaken in respect of the application under Meath County Council Reg. Ref.: LB/191735. The Proposed Development will be located primarily within the overall site of this permitted data storage facility development.

1.2 CONTEXT

1.2.1 Legislative Requirements

The requirement for EIA for certain types and scales of development is set out in the EIA Directives (2011/92/EU and 2014/52/EU), European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (the bulk of which came into operation in September 2018), the European Communities (Environmental Impact Assessment) Regulations 1989-2006, Planning and Development Act 2000 (as amended) and the Planning and Development Regulations 2001-2017. It should be noted that this EIA Report is prepared in accordance with the 2011 EIA Directive (2011/92/EU), as amended by the 2014 EIA Directive.

The EIA Directives list those projects for which an EIA is mandatory (Annex I) and those projects for which an EIA may be required (Annex II). With regard to Annex II projects, Member States can choose to apply thresholds or use case by case examination or a combination of both to assess where EIA is required. In Ireland, a combination of both has been applied.

The project proposed is not listed under Annex I EIA Directives. However, it exceeds the relevant threshold as set out in the Planning and Development Regulations 2001-2019 for Annex II projects. The threshold for "*industrial estate development projects, where the area would exceed 15 hectares"* as set out in Part 2 of Schedule 5 of the Regulations was considered to be most relevant threshold in the context of the Proposed Development in the subject location. An EIA Report has been provided as the Proposed Development is required to provide the permanent power supply for the permitted data storage facility development.

The main objective of an EIA, as set out in Article 3(1) of the 2014 EIA Directive, is to identify, describe and assess the direct and indirect significant impacts of a project on population and human health, biodiversity, land, soils, water, air & climate (including noise), material assets, cultural heritage and the landscape and the interaction between the aforementioned factors. The EIA Report reports on the findings of the EIA process to date and informs the Planning Authority, statutory consultees, other interested parties and the public in general about the likely effects of the project on the environment.

1.2.2 Format of the EIA Report

This EIA Report has been prepared in accordance with the requirements of EIA Directives (2011/92/EU and 2014/52/EU). It is prepared in the Grouped Format Structure following the guideline structure set down in the Environmental Protection Agency (EPA) Draft "*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports" (*2017).

The "*Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment"* (August 2018) and the European Commission *Guidance on the preparation of the Environmental Impact Assessment Report* have been considered in the preparation of the EIA report.

Using the Grouped Format Structure, the EIA Report examines each environmental aspect in a separate chapter. Each chapter generally covers the following:

- Receiving Environment;
- Characteristics of the Proposed Development;
- Potential Impacts of the Proposed Development;
- Do-Nothing Scenario;
- Remedial and Mitigation Measures;
- Predicted Impacts of the Proposed Development; and
- Residual Impacts.

A Non-Technical Summary of the findings of the EIA Report is provided as a separate document.

A Schedule of Mitigation measures to be implemented as part of the Proposed Development is included in Appendix 1.1.

Cumulative impacts for each environmental topic are assessed in Chapter 16 of this EIA Report.

Interactions i.e. the interrelationship between each environmental aspect, are assessed as they occur in each chapter. The final chapter of the EIA Report, Chapter 17 shows where interactions have been identified and how they have been addressed.

1.2.3 Need for the Proposed Development

The project is designed to support the power demand of the adjacent data storage facility development permitted under Meath County Council Reg. Ref. LB/191735 and to serve the power needs of the Proposed Development on the overall landholding of c. 19.46 hectares at the Drogheda IDA Business and Technology Park. Any potential future subsequent phases of development will be subject to a separate Planning Application(s) and environmental assessment as required.

1.3 COMPANY BACKGROUND

The Applicant provides data storage, management and dissemination. To date, the Applicant has developed a number of data facilities in Ireland and are a significant Irish employer.

As noted in Section 1.1, Eirgrid is the transmission system operator (TSO). Since 2006, Eirgrid has operated and developed the national high voltage electricity grid in

Ireland. EirGrid is a state-owned company. EirGrid is independent from ESB. They operate the flow of power on the grid and plan for its future, while ESB Networks (the TAO) is responsible for carrying out maintenance, repairs and construction on the grid. The grid moves wholesale power around the country. Eirgrid brings energy from generation stations to heavy industry and high-tech users. They also supply the distribution network operated by ESB Networks that powers every electricity customer in the country.

As noted in Section 1.1, ESB Networks are the transmission asset owner (TAO). ESB Networks is a subsidiary within ESB Group. ESB Networks finances, builds, and maintains the transmission system through which electricity flows from generation stations to bulk supply points near Ireland's cities and towns. It does this under a TAO licence granted by the Commission for Regulation of Utilities (CRU). ESB Networks performs its transmission related functions under the direction of Eirgrid.

In summary EirGrid operates the transmission system (TSO) while ESB Networks carries out construction, maintenance, and repairs (TAO) under the direction of EirGrid. For this Proposed Development, EirGrid will operate transmission stations, including the existing Corduff substation and the proposed new GIS substation, remotely from their control centres. However, ESB Networks will carry out all local operations on Eirgrid's behalf. Eirgird and ESB Networks are committed to running their businesses in the most environmentally friendly way possible.

1.4 CONSULTATION

AWN, the Applicant and the project team have liaised with An Bord Pleanala (ABP) in advance of lodgment of the application for the Proposed Development on August 11th. Previously consultation meetings were held with Meath County Council as part of the application (for the permitted data storage development in which the Proposed Development was presented as part of future infrastructure development, on the 23rd October 2019 and 27th November 2019.

AWN and the other respective EIA contributors/authors have incorporated advice and comments received from Meath County Council and ABP into the relevant chapters of this EIA Report.

1.5 REGULATORY CONTROL

The proposed transmission of electricity is not an EPA regulated activity in terms of the Industrial Emissions Directive (Directive 2010/75/EU) (which replaced the IPPC directive). The TSO and TAO will ensure the relevant regulatory requirements relating to power activities are met.

1.6 CONTRIBUTORS TO THE EIA REPORT

The preparation and co-ordination of this EIA Report has been completed by AWN Consulting in conjunction with specialist subcontractors. Specialist inputs were provided by the following (Table 1.1):

Table 1.1 Roles and Responsibilities in the EIA Report

Role		Company
EIA Project Management		AWN –Teri Hayes
Engineering Design		Clifton Scannell Emerson Associates (CSEA)
EIA Chapter No.	Chapter Title	Company & Consultant
	Non-Technical Summary	AWN – Input from each specialist
Chapter 1	Introduction	AWN – Teri Hayes
Chapter 2	Description of the Proposed Development	AWN – Teri Hayes
Chapter 3	Planning and Development Context	AWN – Teri Hayes
Chapter 4	Alternatives	AWN – Teri Hayes
Chapter 5	Population and Human Health	AWN – Teri Hayes / Elaine Neary with specialist input from Damian Kelly and Ciara Nolan
Chapter 6	Land, Soils, Geology & Hydrogeology	AWN – Teri Hayes / Paul Conaghan
Chapter 7	Hydrology (including Stage 1 Flood Risk Assessment)	AWN – Teri Hayes / Paul Conaghan
Chapter 8	Biodiversity (including AA Screening Report)	Moore Group – Ger O'Donohoe
Chapter 9	Air Quality & Climate	AWN – Dr Edward Porter and Ciara Nolan
Chapter 10	Noise & Vibration	AWN – Damian Kelly
Chapter 11	Landscape and Visual	Brady Shipman Martin - John Kelly
Chapter 12	Archaeological, Architectural and Cultural Heritage	CRDS Ltd. – Dr Stephen Mandal
Chapter 13	Traffic & Transportation	Clifton Scannell Emerson Associates – Carol Diaz Rosario
Chapter 14	Material Assets	AWN – Elaine Neary
Chapter 15	Waste Management (including C&D Waste Management Plan)	AWN – Elaine Neary
Chapter 16	Cumulative Impact	AWN – Input from each specialist
Chapter 17	Interactions- Interrelationship between the Aspects	AWN – Teri Hayes

Project Director, Teri Hayes, BSc MSc PGeo. Teri is a member of the International Association of Hydrogeologists (Irish Group) – former president and a professional member of the Institute of Geologists of Ireland Teri is a Director with AWN Consulting with 25 years of experience in water resource management and environmental assessment and risk analysis. She has project managed and contributed to numerous environmental impact assessments and design of appropriate mitigation measures, acted as an expert witness at public hearings, lectured in EIA for post graduate classes and providing expert advice on EIA sections for planning authorities.

Project Manager/EIA Co-ordinator/Selected Chapters, Elaine Neary, BA (Natural Sciences), MApplSc. (Environmental Science) and is a Chartered Member of the Institute of Waste Management (MCWIM). She is an Associate in AWN and has over 16 years' experience in environmental consultancy with extensive experience in Environmental Impact Assessment and EPA IED/IPPC and Waste Licence Application and Co-Ordination. She has project managed, coordinated and prepared specialist inputs for numerous EIA Reports.

Land, Soils, Geology, Hydrogeology & Hydrology, Teri Hayes, (as above)

Paul Conaghan. Paul is an Environmental Consultant at AWN with over 8 years' experience working in the environmental science and environmental engineering fields. Paul holds a degree in Environmental Science from the University of Limerick and a masters in environmental engineering from Queens University Belfast. Paul has worked on a wide range of projects including hydrogeology, contaminated land, project management, site geotechnical evaluations, site assessments specialising in environmental impact assessment. Paul is a member of the International Association of Hydrogeologists.

Air Quality & Climate, Ciara Nolan is an Environmental Consultant in the Air Quality section of AWN. She holds a BSc in Energy Systems Engineering from University College Dublin and has also completed an MSc in Applied Environmental Science at University College Dublin. She is an Associate Member of the Institute of Air Quality Management. She specialises in the fields of ambient air monitoring, indoor air monitoring and EIA.

Biodiversity/Appropriate Assessment, Ger O'Donohoe, Ger is a Consultant Ecologist with Moore Group. Ger graduated from GMIT in 1993 with a B.Sc. in Applied Freshwater & Marine Biology and completed an M.Sc. in Environmental Sciences, graduating from TCD in 1999. Ger has over 20 years of experience as an environmental consultant with experience in the planning and management of numerous complex Environmental Impact Assessments for large scale developments nationwide. He has wide ranging experience as an expert witness at public hearings.

Noise & Vibration, Damian Kelly is a Director and Principal Acoustic Consultant with AWN Consulting. Damian holds a BSc from DCU and an MSc from Queens University Belfast. He has over 18 years' experience as an acoustic consultant. He is a member of the Institute of Acoustics. He has extensive knowledge in the field of noise modelling and prediction, having prepared the largest and most complex examples of road and industrial noise models currently in existence in Ireland. He was also co-author of the EPA document "*Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities" (2012)* and advised in relation to the noise limits applied to commercial developments by the various local authorities in the Dublin region.

Landscape and Visual, John Kelly, BArch (Hons) MRIAI. John is a qualified Architect and Managing Partner of Brady Shipman Martin and has over 25 years' experience of direct involvement in the planning, design and environmental assessment of major infrastructure, industrial, educational, commercial, tourism, leisure and energy projects, as well as large scale mixed-use master-plans. John utilises and develops photographic, surveying and digital methodologies that assist in establishing a thorough understanding of the three-dimensional characteristics of sites and their context.

Archaeology, Dr Stephen Mandal (MIAI PGeo EurGeol) is co-founder (in 1997) and managing director of CRDS Ltd. Stephen holds an honours science degree in Geology (1991) and a PhD in Geoarchaeology He is professional member of the Institute of Archaeologists of Ireland, the Institute of Geologists of Ireland, and the European Federation of Professional Geologists. In 2009 Stephen was elected to the Royal Irish Academy Committee for Archaeology, and in September 2009 was elected as Vice Chairperson of the committee. Stephen is an experienced expert witness and has a practical approach to mitigation design. CRDS is an award-winning leader in undertaking the cultural heritage components of large-scale impact assessments and has a diverse project portfolio. CRDS has undertaken a wide variety of archaeological, architectural and cultural heritage assessments for quarries including desk-based studies, archaeological impact assessments, pre-development

testing, monitoring and excavation, including: Bunratty, Co. Clare (Archaeological Assessment, Metal Detecting Survey, Monitoring & Excavation), Domard, Co. Wicklow (Cultural Heritage Component of EIS), Boyle Bypass (Archaeological Assessment Report of quarry).

Traffic & Transportation, Carol Diaz-Rosario, MSc Transport Planning and Modelling. Carol is a Transportation Engineer with CSEA with 2 years of experience in the traffic and transportation field. She has been involved in a variety of projects involving transport planning, Modelling, Traffic and Transport assessments, sustainable mobility planning, and engineering design. In addition to that, Carol has undertaken junction analysis using modelling software such as LinSing3, ARCADY, Vissim, and Vissum.

1.7 DESCRIPTION OF EFFECTS

The quality, magnitude and duration of potential effects are defined in accordance with the criteria provided in the EPA Draft EIA Report Guidelines 2017 as outlined in Table 1.2.

Table 1.2. Description of Effects as per EPA Guidelines (Draft, 2017)

Effect Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	A change which does not affect the quality of the environment
	Negative	A change which reduces the quality of the environment
Significance	Imperceptible	An impact capable of measurement but without noticeable consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without noticeable consequences
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging trends
	Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
	Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters the majority of a sensitive aspect of the environment.
	Profound	An impact which obliterates sensitive characteristics
Duration of Effects	Momentary Effects	Effects lasting from seconds to minutes
	Brief Effects	Effects lasting less than a day
	Temporary Effects	Effects lasting less than a year
	Short-term Effects	Effects lasting one to seven years.
	Medium-term Effects	Effects lasting seven to fifteen years
	Long-term Effects	Effects lasting fifteen to sixty years
	Permanent Effects	Effects lasting over sixty years
	Reversible Effects	Effects that can be undone, for example through remediation or restoration
Probability of Effects	Likely Effects	The effects that can reasonably be expected to occur as a result of the planned project if all mitigation measures are properly implemented.
	Unlikely Effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Type of Effects	Indirect Effects	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.
	'Do Nothing'	The environment as it would be in the future should no development of any kind be carried out
	`Worst case' Effects	The effects arising from a project in the case where mitigation measures substantially fail
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant impact is of greater significance than the sum of its constituents

1.8 ADDITIONAL ASSESSMENTS REQUIRED

This section addresses the additional approvals and assessments required under other EU Directives and legislation.

- **Appropriate Assessment Screening Report** – a screening report has been completed for the Proposed Development, as required under the Habitats and Birds Directive (92/43/EEC and 79/409/EEC) and is included as Appendix 8.1. of this EIA Report; and

- **Flood Risk Assessment** - A Stage 1 Flood Risk Assessment has been undertaken for the overall site and is appended to Chapter 7 Hydrology as Appendix 7.2.

1.9 FORECASTING METHODS AND DIFFICULTIES IN COMPILING THE SPECIFIED INFORMATION

Forecasting methods and evidence used to identify and assess the significant effects on the environment for each environmental aspect are set out in each chapter.

There were no significant difficulties in compiling the specified information for this EIA Report. Any issues encountered during the assessment of individual factors are noted within the relevant chapters.

APPENDIX 1.1

SCHEDULE OF MITIGATION

Prepared by AWN Consulting Ltd.

Appendix 1.1 - Schedule of Mitigation Measures

Project Phase	Mitigated By	Justification	Mitigation Measures	References
General Environmental Protection				
Construction	Management	Environmental Protection	All measures as outlined in the Construction Environmental Monitoring Plan (CEMP) shall be fully implemented for the duration of the construction phase. The CEMP shall include but not be limited to operational controls for dust, noise and vibration, waste management, protection of soils and groundwaters, protection of flora and fauna, site housekeeping, emergency response planning, site environmental policy, environmental regulatory requirements and project roles and responsibilities. The CEMP shall also address extreme of weather (drought, wind, precipitation, temperature extremes) and the possible impacts on receptors and mitigation of same. The CEMP shall be treated as a live document and communicated to all site personnel.	
Construction & Operation	Management	Environmental Protection	The applicant shall, during both construction and operational stages, maintain a Complaints Register to record any complaints regarding but not limited to noise, odour, dust, traffic or any other environmental nuisance. The Complaint Register shall include details of the complaint and measures taken to address the complaint and prevent repetition of the complaint.	
Construction	Management	Environmental Protection	Prior to commencement of any development works on the subject lands, the applicant shall prepare a detailed Environmental Emergency Response Plan for the construction and commissioning stage of the proposed project. This shall be treated as a live document and communicated to all site personnel.	

Land, Soil and Geology				
Construction	Management	Environmental Pollution	The following requirements shall apply in relation to land and soils: a) Prior to the construction of the building the applicant shall prepare an earthworks schedule/plan and programme (either as part of the WMP or as a separate document) for written agreement with the Planning Authority identifying the extent of 17 05 04 material on site and its treatment, should material be required to be removed from site, the programming of the removal, the waste carriers and destination sites requires detailing. The Applicant shall ensure there is a robust document tracking system to trace all movements of 17 05 04. b) The applicant shall include, in the CEMP, mitigation measures for extreme weather conditions that may affect earthworks moving and stockpiling, in this case extreme high temperatures resulting in drought conditions, and where there may be restrictions on the use of water for conventional dust suppression and heavy precipitation which may result in slope instability or fines run-off from stockpiled material.	
Construction	Management	Environmental Pollution	Subsoil will be excavated to facilitate the construction of foundations, access roads, car parking areas, expansion of drainage connections and other ancillary works. The proposed development will incorporate the reduce, reuse and recycle approach in terms of soil excavations on site. The construction will be carefully planned to ensure only material required to be excavated will be with as much material left in situ as possible. Excavation arisings will be reused on site where possible	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009); "Guidelines on protection of fisheries during construction works in and adjacent to waters" Inland Fisheries Ireland (2016)
Construction	Management	Environmental Pollution	It is unlikely any contaminated material will be encountered during construction of the proposed development. Nonetheless, any excavation works will be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated from clean/inert soil. In the unlikely event that any potentially contaminated soils are encountered, they should be tested and classified as hazardous or non-hazardous in accordance with the EPA Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous publication, HazWasteOnline tool or similar approved method. The material will then need to be classified as inert, non-hazardous, stable non-reactive hazardous or hazardous in accordance with EC Decision 2003/33/EC. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009); Waste Management Act, 1996.

Construction	Management	Soil and Water Protection	Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated against through the implementation of an appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	Where the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011. EPA agreement will be obtained before re-using the spoil as a by-product. Where material cannot be reused off site it will be sent for recovery or disposal at an appropriately authorised facility.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); Inland Fisheries Ireland (2016) "Guidelines on protection of fisheries during construction works in and adjacent to waters", and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	If any waste soil requires removal from site, it should be classified by an experienced and qualified environmental professional to ensure that the waste soil is correctly classified for transportation and recovery/disposal offsite.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); Inland Fisheries Ireland (2016) "Guidelines on protection of fisheries during construction works in and adjacent to waters"; and

				National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	All fill and aggregate for the Proposed Development will be sourced from reputable suppliers. All suppliers will be vetted for: • Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development; • Environmental Management status; and • Regulatory and Legal Compliance status of the Company.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts: • Designation of a bunded refuelling areas on the site; • Provision of spill kit facilities across the site; • Where mobile fuel bowsers are used the following measures will be taken: o Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; o The pump or valve will be fitted with a lock and will be secured when not in use; o All bowsers to carry a spill kit o Operatives must have spill response training; and o Drip trays used on any required mobile fuel units.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted: • Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area; • Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage; • All drums to be quality approved and manufactured to a recognised standard; • If drums are to be moved around the site, they will be secured and on spill pallets; and • Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Construction	Management	Soil and Water Protection	Run-off from excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management will ensure that there will be minimal inflow of shallow/perched groundwater into any excavation.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); Guidance to Storage and Transfer of Materials for Scheduled Activities (EPA, 2004); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Operational	Prevention	Soil and Water Protection	Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017);

			directly entering into any water courses/ drainage ditches.	Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Operational	Prevention	Soil and Water Protection	Prior to operation of the proposed development, a comprehensive set of operational procedures will be established (based on those used at other similar facilities) which will include site-specific mitigation measures and emergency response measures.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Operational	Prevention	Soil and Water Protection	In order to minimise any impact on the underlying subsurface strata from material spillages, the fuel storage tank is located above ground in a designated fuel storage bund with an impervious base. Drainage from the bund will be diverted to foul sewer. Delivery of fuel will be undertaken following a documented procedure which minimises risk of spills and spill containment/clean-up kit shall be readily available on site.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).
Operational	Prevention	Soil and Water Protection	A proportion of the development area will be covered in hardstand (c. 3.76ha). This provides protection to the underlying aquifer but also reduces local recharge in this area of the aquifer. As the area of aquifer is large this reduction in local recharge will have no significant change in the natural hydrogeological regime.	Environmental Protection Agency (EPA) Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017); Institute of Geologists of Ireland (IGI) 'Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements' (2013); and National Roads Authority (NRA) 'Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' (2009).

Hydrology				
Construction	Management	Environmental Protection	Prior to the commencement of development on site, the applicant shall submit for the written agreement of the Planning Authority appropriate certified documentation from a suitably qualified and appropriate professional person demonstrating that: a) From a flooding perspective, the proposed development does not have a detrimental effect on third parties. b) Access routes to and from the proposed development will remain operable during critical flood events. c) Details of appropriate finished floor levels have been agreed with a nominee of the Planning Authority.	
Construction & Operation	Management	Environmental Protection	The following requirements shall apply regarding surface water and groundwater protection during the construction and operation of the proposed development: a) The Applicant shall agree, in writing, with the Local Authority a protocol for reporting and managing accidental spillages during construction and operation stage that may cause soil contamination or ground or surface water pollution. b) All hydrocarbons, chemicals and oils storage tanks required for the construction and decommissioning stages shall be bunded to a volume not less than the greater of the following: i. 110% of the capacity of the largest tank within the bunded area; or ii. 25% of the total volume of substance which could be stored within the bunded area. c) Refuelling of plant and machinery shall take place at dedicated refuelling areas only as detailed in the CEMP. d) The Applicant shall ensure adequate supply of spill kits and hydrocarbon absorbent pads are stocked on site e) The dedicated bunded area shall be located at least 30m from watercourses f) The applicant shall include as part of the Construction Environmental Management Plan measures to ensure silts, washwaters, chemical, etc. are not discharged to ground or surface waters.	

Construction	Management	Environmental Protection	A detailed CEMP will be prepared and maintained by the appointed contractors during the construction phase of the proposed project. The CEMP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the CEMP. At a minimum, the CEMP will be formulated in consideration of the standard best international practice including, but not limited, to: • CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association; • CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association; • CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association; • BPGCS005, Oil Storage Guidelines; • CIRIA 697 (2007), The SUDS Manual; and • UK Pollution Prevention Guidelines, (PPG) UK Environment Agency, 2004.	CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532) Construction Industry Research and Information Association; CIRIA (2002) Control of water pollution from construction sites: guidance for consultants and contractors (SPI56) Construction Industry Research and Information Association; CIRIA (2005), Environmental Good Practice on Site (C650); Construction Industry Research and Information Association; BPGCS005, Oil Storage Guidelines; CIRIA 697 (2007), The SUDS Manual; UK Pollution Prevention Guidelines, (PPG) UK Environment Agency, 2004.
Construction	Prevention	Water protection	Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks/ponds) Should any discharge of construction water be required during the construction phase, the discharge will be treated using a sediment trap or siltbuster as required.	As above
Construction	Prevention	Water protection	The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the storm water drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact.	As above
Construction	Prevention	Surface and groundwater Protection	The following mitigation measures will be taken at the construction stage in order to prevent any spillages of fuels and prevent any resulting impacts to surface water systems; • Designation of a bunded refuelling areas on the site; • Provision of spill kit facilities across the site; • Where mobile fuel bowsers are used the following measures will be taken: o Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use; o The pump or valve will be fitted with a lock and will be secured when not in use; o All bowsers will carry a spill kit and operatives must have spill response training; and o Portable generators or similar fuel containing equipment will be placed on suitable drip trays.	As above
Construction	Prevention	Surface and groundwater Protection	In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted: • Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded areas; • Clear labelling of containers so that appropriate remedial measures can be taken in the event of	As above

			a spillage; • All drums to be quality approved and manufactured to a recognised standard; • If drums are to be moved around the site, they should be done so secured and on spill pallets; and • Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.	
Construction	Prevention	Surface and groundwater Protection	All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.	As above
Construction	Prevention	Surface and groundwater Protection	Temporary storage of soil will be carefully managed in such a way as to prevent any potential negative impact on the receiving environment. The material will be stored away from any surface water drains (see Surface Water Run-off section above). Movement of material will be minimised to reduce degradation of soil structure and generation of dust.	As above
Construction	Prevention	Surface and ground Water Protection	All staff will be trained in spill containment measures and emergency response.	As above
Construction	Prevention	Surface and ground Water Protection	All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.	As above
Operational	Management	Surface and ground Water Protection	The containment measures planned will minimise the risk of release of solid/ liquid material spillages to the water environment. Containment measures will include storage of fuels on site in bunded containers or compartments. The design of all bunds will conform to standard bunding specifications - BS EN 1992-3:2006, Design of Concrete Structures – Part 3: Liquid retaining and containment measures.	As above

Biodiversity				
Construction and Operation	Protection	Ecological Protection (Biodiversity))	Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1st to August 31st.	CIRIA Report C532 of Water Pollution from Construction Sites. CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland. Institute of Ecology and Environmental Management. Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010). EC (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC. European Commission, Brussels.
Construction and Operation	Protection	Ecological Protection (Bats)	'Bat-sensitive' lighting techniques will be incorporated into the lighting plan, which will avoid or minimise any potential impacts of lighting on bats. 'Bat-sensitive lighting' for this development would have the following design principles: • If lighting is required near site boundaries, the lighting poles will be installed on the boundary and will face inwards (i.e. towards the centre of the site). This will ensure that lighting is not directed outside the site boundaries. • All lights around the site boundary will be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill. • The intensity of lighting will be kept to the minimum level required for safety and security. • Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Mercury, metal halide or high-UV LED bulbs will not be used. These measures will apply both to temporary lighting during the construction of the Proposed Development, and to permanent lighting during the operation of the development.	CIRIA Report C532 of Water Pollution from Construction Sites. CIEEM (2016) Guidelines for Ecological Impact Assessment in the UK and Ireland. Institute of Ecology and Environmental Management. Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010). EC (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC. European Commission, Brussels.

Air, Dust and Climatic Factors				
Construction & Operation	Management	Dust Management & Emissions	The following requirements shall apply in relation to Air and Climate Change during the construction and operation of the proposed development: a) Dust emissions shall not exceed 350mg/m^2/day. b) The Applicant shall also include in the CEMP mitigation measures for extreme weather conditions that may affect air quality, in this case extreme high temperatures resulting in drought conditions, and where there may be restrictions on the use of water for conventional dust suppression. c) The Applicant shall record the actual construction vehicle and plant emissions to air, this shall include all plant used on site and all deliveries to and from the site for the duration of the project. d) The Applicant, contractor and sub-contractors shall endeavour to utilise low energy and low emissions vehicles and plant where possible, this shall be detailed in the CEMP. e) Burning of waste, including green waste, is prohibited on site. f) Should a developed area, either existing or future, become suitable for a district heating system, the Applicant shall provide the necessary infrastructure, technology and plant from the Data Centre to the boundary of the site for connection by others.	
Construction	Management	Dust Management	At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. As the prevailing wind is predominantly south-westerly, locating construction compounds and storage piles downwind (to the north-east) of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).

Construction	Prevention	Dust Management	When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (UK Office of Deputy Prime Minister (2002), BRE (2003)). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favorable in general for the suppression of dust for a significant period of the year. The following measures should be taken in order to avoid dust nuisance occurring under unfavorable meteorological conditions: • The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised; • During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions; • The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board will also include head/regional office contact details; • It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses; • A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out; • It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein; and, • At all times, the procedures put in place will be strictly monitored and assessed.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).
Construction	Management	Dust Management	The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and satisfactory procedures implemented to rectify the problem.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).
Construction	Prevention	Dust Management	Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B:

			dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK Office of Deputy Prime Minister, 2002). • A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads; • Access gates to the site shall be located at least 10m from sensitive receptors where possible; • Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering shall be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and, • Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.	Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).
Construction	Prevention	Dust Management	Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust. • During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust; and, • During periods of very high winds (gales), activities likely to generate significant dust emissions should be postponed until the gale has subsided.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).
Construction	Prevention	Dust Management	The location and moisture content of storage piles are important factors which determine their potential for dust emissions. • Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles should be located downwind of sensitive receptors; • Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK Office of Deputy Prime Minister, 2002); • Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).

Construction	Prevention	Dust Management	Spillage and blow-off of debris, aggregates and fine material onto public roads should be reduced to a minimum by employing the following measures: • Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust; • At the main site traffic exits, a wheel wash facility shall be installed if feasible. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).
Construction	Management	Dust Management	The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be: • The specification of a site policy on dust and the identification of the site management responsibilities for dust issues; • The development of a documented system for managing site practices with regard to dust control; • The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; • The specification of effective measures to deal with any complaints received.	'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014); 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996); 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002); 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003); 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997). ; and 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).

Noise and Vibration				
Construction & Operation	Management	Noise & Vibration	The following requirements shall apply regarding Noise and Vibration during the construction and operation of the proposed development: a) During the construction phase noise levels at noise sensitive locations shall not exceed 70dB(A) between 0700 to 1900 hours Monday to Friday and 0800 to 1400 hours Saturday and 45dB(A) at any other time. Noise exceedance activities must be agreed in writing with Meath County Council prior to the activity taking place. b) The construction works shall be carried out in accordance with the noise guidance set out by BS 5228-1 :2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites and the NRA Guidelines for the treatment of Noise and Vibration in National Roads Schemes. c) The applicant and/or his contractor shall establish protocol for informing residents at noise sensitive receptors of scheduled noise emitting activities outside normal working hours and shall maintain for inspection a noise complaints register. d) The applicant and/or his contractor shall give consideration to utilising low noise and vibration emitting construction plant and tools. e) The applicant shall, at a minimum for construction noise, employ noise mitigation measures as detailed in the outline CEMP, these shall be developed as necessary. f) During the day to day operational phase noise levels when measured at noise sensitive receptors as identified in the EIAR shall not exceed the following limits; 55dB $L_{Aeq,\ 15\ min}$ (daytime) 50dB $L_{Aeq,\ 15\ min}$ (evening) 45dB $L_{Aeq,\ 15\ min}$ (night time) g) Vibration from the construction activities shall be limited to the following; 1. At Less than 10Hz, 8mm/s, 2. At 10 to 50 Hz, 12.5mm/s 3. at 50 to 100Hz, 20mm/s. This is the allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the/a source of vibration.	

Construction	Management	Noise Pollution	Management of noise and vibration on site will be minimised and managed through the implementation of the following measures: - Limit the hours during which the site activities likely to create high levels of noise or vibration are permitted; - Establish channels of communication between the contractor/developer, Local Authority and residents. Appoint a site representative responsible for matters relating to noise and vibration; - Monitoring typical levels of noise and vibration during critical periods and at sensitive locations, and; - All site access roads will be kept even so as to mitigate the potential for vibration from lorries.	British Standard BS 5228:2009+A1:2014 (Parts 1 and 2) Code of practice for noise and vibration control on construction and open sites EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (2017) and draft revised Guidelines on information to be contained in Environmental Impact Statements; and Advice Notes for preparing EIS (2015). Draft 'Guidelines for Noise Impact Assessment' produced by the Institute of Acoustics/Institute of Environmental Management and Assessment Working Party.
Construction	Management	Noise Pollution	It is envisaged that a variety of practicable noise control measures will be employed. These may include: - selection of plant with low inherent for generation of noise and/or vibration - erection of barriers as necessary around items such as generators or high duty compressors; - situate any noisy plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.	As above
Construction	Management	Noise Pollution	Vibration from construction activities be limited to the values set out in Chapter 10 Noise and Vibration of the EIAR. It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitude of vibration slightly greater than those in the EIAR are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage these limits may need to be reduced by up to 50%.	As above
Operational	Management	Noise Pollution	Noise from external plant will be minimised by the following measures: • Purchasing low noise generating equipment, and; • Incorporating appropriately specified in line attenuators for stacks and exhausts where necessary. With due consideration as part of the detailed design process, this approach will result in the site operating well within the constraints of the best practice guidance noise limits that have been adopted as part of this detailed assessment.	As above

Landscape and Visual Assessment				
Construction	Management	Landscape Protection	The site should be managed in an orderly manner, with perimeter fencing and hoarding kept in good condition, and vehicular access managed to avoid congestion outside the development site. All vehicular traffic leaving the site should be clean, and the local road network kept clean in accordance with the CEMP.	EPA Draft 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2017) 'Draft Advice Notes for preparing Environmental Impact Statements' (2015)
Construction	Management	Landscape Protection	Building materials, design detail and textural finishes shall be in accordance with the submitted drawings and documentation.	
Construction	Management	Landscape Protection	No additional signage shall be erected on the lands or buildings without the appropriate authorisation of the Planning Authority.	

Archaeological, Architectural and Cultural Heritage				
Construction	Protection	Protection of Local Heritage	Substantial sub-surface archaeological features have been identified through geophysical survey and archaeological testing within the site boundary. The following programme of works is being implemented: • A suitably qualified archaeological consultant (CRDS Ltd) has been appointed to oversee the works and undertake the required archaeological excavations, monitoring and reporting; • A suitably qualified archaeological contractor (IAC Ltd) has been appointed to undertake the archaeological excavations; • Archaeological excavation works are on-going at the site (as of 27-Aug-2020) and are due for completion by November 2020. • The guidelines for archaeological excavation works are being followed with respect to the excavation works (see 2017 Code of Practice for Archaeology agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs and Transport Infrastructure Ireland; see also 2012 Best Practice Standard: Archaeological services in fixed price contracts). • In accordance with the above guidelines and licensing conditions, a full report on findings will be submitted to the National Monuments Service.	EPA Draft 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2017) 'Draft Advice Notes for preparing Environmental Impact Statements' (2015)

Traffic and Transportation				
Construction	Prevention	Traffic Congestion	Prior to the commencement of development on site, the application shall submit a Construction Stage Traffic Management Plan for the written agreement of the Planning Authority.	
Construction	Prevention	Traffic Congestion	During the construction phase of the development, the following measures will be put in place to reduce the impact on the surrounding environment: 1. The contractor will be required to provide wheel cleaning facilities, and regular cleaning of the sites construction and main access road will be carried out; 2. Temporary car parking facilities for the construction workforce will be provided within the site and the surface of the car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads, and; 3. Monitoring and control of construction traffic will be ongoing during construction works. Construction traffic will be managed to avoid unnecessary trips during peak hours.	TII Traffic and Transport Assessment Guidelines, 2014; Design Manual for Urban Roads and Streets (DMURS), 2013, Department of Transport, Tourism and Sport & Department of Environment, Community and Local Government.

Material Assets: Water Supply, Drainage & Utilities				
Construction	Management	Continuation of Services	Ongoing consultation with MCC, Irish Water, Eirgrid, ESB Networks and other relevant service providers within the locality and compliance with any requirements or guidelines they may have will ensure a smooth construction schedule without disruption to local and business community.	
Construction	Management	Surface Water Infrastructure	The excavation of trenches relating to the cable installation within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure there is no impact on existing users.	
Construction	Management	Surface Water Infrastructure	Strict quality control measures will be undertaken while laying pipes to minimise or eradicate infiltration and ex-filtration.	
Construction	Management	Foul Sewer Infrastructure	Foul drainage for the Proposed Development will be in accordance with the relevant standards for design and construction, including the Irish Water Code of Practice for Wastewater Infrastructure, The Building Regulations Technical Guidance Document (TGD) 'Part H' & the Regional Code of Practice for Drainage Works.	
Construction	Management	Continuation of Services	The works contractor will be obliged to put best practice measures in place to ensure that there are no interruptions to services. It is not anticipated that there will be any interruptions to services, but should interruptions be anticipated, they will be agreed in advance.	Building Regulations Technical Guidance Document H Drainage and Waste Water Disposal, Department of Environment, Heritage and Local Government (2010)

Waste Management				
Construction	Management	Environmental Pollution	The following requirements and standards shall apply to waste management arsing during the construction and operation of the proposed development: a) The Applicant shall prepare a Waste Management Plan (WMP) for the proposed development for the written agreement of the Planning Authority prior to the commencement of any site activity. The WMP shall include but not be limited to project description, legislation requirements, demolition waste, construction phase waste, categories of construction waste, anticipated hazardous waste, non-construction waste, segregation of waste streams, estimated waste generated, waste hierarchy and adherence to same, roles and responsibilities and communication of WMP, details of recovery and disposal sites, details of waste hauliers, record keeping and documentation, waste audit procedures. The WMP shall be prepared in accordance with "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (2006) and "Guidelines for the Management of Waste from National Road Construction Road Projects" (Rev. 2014), the WMP shall also take cognisance of the current Regional Waste Management Plan in particular to the upper tiers of the Waste Hierarchy. All waste generated on site shall be recovered/ disposed of at an authorised facility and transported by an authorised collector. The WMP shall be treated as a live document and communicated to al1 relevant personnel. b) All waste generated during construction, including surplus excavation material to be taken off-site, shal1 be only recovered or disposed of at an authorised site which has a current Waste Licence or Waste Permit in accordance with the Waste Management Acts, 1996 to 2008. This shall not apply to the reuse of excavated material within the applicant's site boundary. c) The applicant shall ensure that all waste removed from the site is collected and transported by an authorised collector. The applicant shall ensure that all activities pertaining to the collection and transportation of waste are as detailed on the waste collection permit. d) The applicant shall manage all waste streams during the construction and commissioning stage of the project in accordance with the DOECLG "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (2006) and shall take cognisance of the current Regional Waste Management Plan in particular to the upper tiers of the Waste Hierarchy. e) The Applicant shall provide to the Local Authority, on completion of the	

			works, a comprehensive report detailing the management of the all waste streams generated during the construction and commissioning stages of the project. This shall include but not be limited to type of waste streams, amount of each waste stream generated, destination of waste streams (including final destination if applicable), percentage of waste re-used, recycled, recovered and disposed, and prevention and minimisation initiatives undertaken. f) In the event it is necessary to import soil and stone or topsoil for any element of the proposed development to Applicant shall ensure a Certificate of Registration or Waste Facility Permit as per the Waste Management (Facility and Registration) Regulations 2007, as amended is secured in advance of the works	
Construction	Management	Environmental Pollution	A project specific C&D WMP has been prepared in line with the requirements of the guidance document issued by the Department of Environment Heritage and Local Government (DoEHLG). Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction phase of the Proposed Development. Prior to commencement of construction, the contractor(s) will be required to refine/update this document to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.	The Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021. The Meath County Development Plan 2013 – 2019. European Communities Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC
Construction	Management	Environmental Pollution	Building materials will be chosen with an aim to 'design out waste'	As above
Construction	Management	Environmental Pollution	On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated: o Concrete rubble (including ceramics, tiles and bricks); o Plasterboard; o Metals; o Glass; and o Timber.	As above
Construction	Management	Environmental Pollution	Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible	As above
Construction	Management	Environmental Pollution	All waste materials will be temporarily stored in skips or other suitable receptacles in designated areas of the site	As above
Construction	Management	Environmental Pollution	Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required)	As above
Construction	Management	Environmental Pollution	A person responsible for waste management will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works	As above
Construction	Management	Environmental Pollution	All construction staff will be provided with training regarding the waste management procedures	As above

Construction	Management	Environmental Pollution	All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal	As above
Construction	Management	Environmental Pollution	All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities	As above
Operational	Management	Environmental Pollution	All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.	As above
Operational	Management	Environmental Pollution	On-site segregation of all waste materials into appropriate categories including (but not limited to): • Dry Mixed Recyclables; • Organic food/green waste; • Mixed Non-Recyclable Waste; • Batteries (non-hazardous and hazardous); • Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment; and • Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.).	As above
Operational	Management	Environmental Pollution	All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly labelled with the approved waste type to ensure there is no cross contamination of waste materials	As above
Operational	Management	Environmental Pollution	All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available	As above
Operational	Management	Environmental Pollution	All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities	As above
Operational	Management	Environmental Pollution	All waste leaving the site will be recorded and copies of relevant documentation maintained	As above

2.0 DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 INTRODUCTION

As described in Chapter 1 (Introduction), the Applicant is applying to ABP for planning permission for the provision of a two storey 110kV GIS substation and associated dropdown 110kV transmission lines, along with associated and ancillary works, hereafter referred to as the 'Proposed Development'. The Proposed Development is further described in section 2.2.2.

The following chapter presents a description of the Proposed Development as required by the relevant planning legislation, Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment, as amended by the 2014 EIA Directive (2014/52/EU) (herein referred to as the EIA Directive), European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, the current EPA "Guidelines on the Information to be Contained in Environmental Impact Assessment Reports" 2017 and the EPA Draft "Advice Notes for Preparing Environmental Impact Statements" (2015) (herein referred to as the EPA Draft Advice Notes for EIS 2015). Guidance outlined in the 'Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report'' published by the European Commission in 2017 was also considered in the preparation of this EIA Report.

2.2 CHARACTERISTICS OF THE APPLICATION

2.2.1 Description of Site

The proposed development is to be located on a site within the Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. The development is located to the north of the data storage facility permitted under Reg. Ref.: LB/191735. The Proposed Development lies to the east of the M1 motorway linking Dublin and Belfast, and on the western extremity of Drogheda. The wider landholding in which the Proposed Development is located comprises a site which is served by existing roads infrastructure implemented as part of the setting out of the IDA Business and Technology Park. The wider landholding is subject to an extant permission (MCC ref: LB/191735) for a data storage facility and ancillary development hereafter referred to as the 'Permitted Development'. The Permitted Development is currently under construction.

The Proposed Development is situated within the townland of Rathmullan and comprises an area of c. 3.077 hectares. The Proposed Development land is currently undeveloped with the exception of elements of road infrastructure. The Proposed Development site is bound to the south east by the remainder of the IDA Business and Technology Park. To the south is a data storage development/ Permitted Development which is currently under construction, to the north by undeveloped lands, to the west by the M1 Motorway, and to the east by an existing estate road within the IDA Business and Technology Park.

The north and east of the GIS substation compound is largely defined by agricultural lands, as well as some once-off developments associated with these agricultural holdings. Larger residential developments also exist north of the Proposed

Development site, such as residential developments in Tredagh (c. 750m north of the Proposed Development site) and Riverbank (c. 330m north of the Proposed Development site). The River Boyne flows west-to-east c. 1km north of the site.

The ducting for the 49kVa electric connection will run along the road located to the south of the International Fund Services (Ireland) Limited property. Further east of the Proposed Development lands, the area is largely defined by medium- to high-density residential uses, with residential developments such as Beechwood and Cedarfield within 200m of the eastern and north-eastern boundaries of the Proposed Development site.

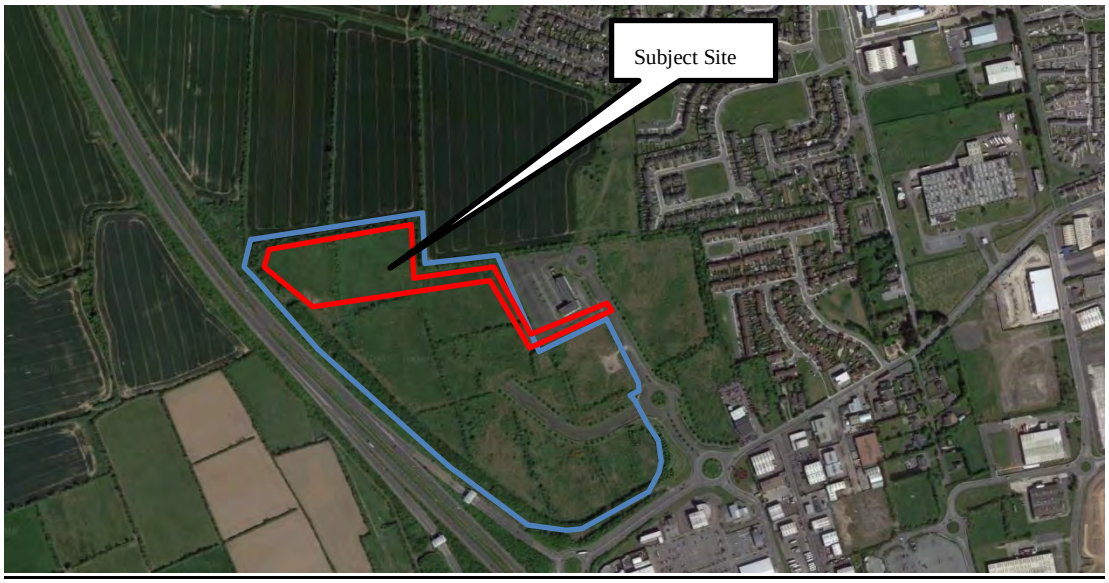

***Figure 2.1*:** Subject site outlined in red with wider land holding outlined in blue

The Proposed Development site is primarily undeveloped (covered in grass and scrub) with the exception of the portion of the site which extends onto an existing access road, and a portion of the existing main estate road (to provide a 49kVa electrical supply to the 110kV GIS Substation).

The land slopes from west to east and is bound to the north and west by mature tree planting which was implemented at the time that the IDA Business and Technology Park was originally established at this location in the early 2000s.

2.2.2 Proposed Development Description

The Proposed Development primarily comprises the provision of a substation compound and associated dropdown 110kV transmission lines, along with associated and ancillary works and is described as follows:

The proposed substation compound is subdivided into two parts. The western part of the compound will accommodate a two storey 110kV GIS substation building (with a gross floor area of c. 1,447 sq.m). The eastern part of the compound will accommodate four transformers and a single storey client control building (with a gross floor area of c. 423 sq.m) and associated underground services. Both parts of the substation compound are enclosed within 2.6 metre high security fencing.

The proposed dropdown 110kV transmission lines will connect the proposed 110kV GIS substation building to existing 110kV overhead transmission lines traversing the

subject site to the west of the proposed substation and will comprise the provision of two dropdown masts (c. 16 meters in height) and associated overhead transmission lines, transitioning to underground transmission lines set within ducts that will subsequently progress into the 110kV GIS Substation building, which will in turn connect to the four transformers.

The development includes access paths, landscaping, security fencing, provision of internal access roads and car parking within the GIS substation compound, provision of a 49kVa electricity connection (c. 544 metres in length, connecting to existing electrical services in the main avenue of the Drogheda IDA Business and Technology Park) for the GIS substation building, a unit substation, lightning masts, services, all associated construction works, and all ancillary works.

Figure 2.1 presents the red line boundary. Figure 2.2a present the GIS substation, transformer bays and client control building. Figure 2.2b presents the route of the 49kVA electrical supply.

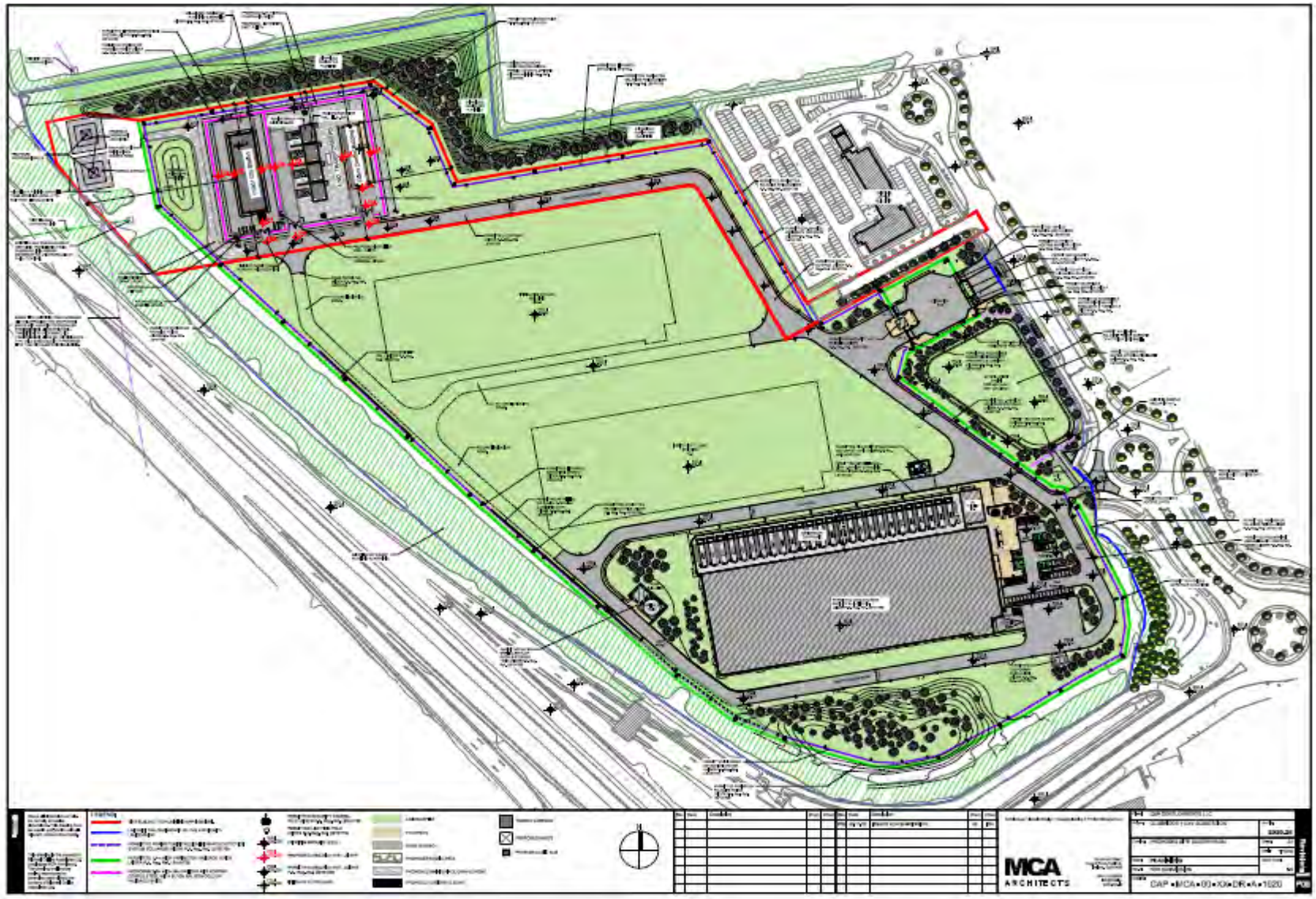

Figure 2.2 Proposed site layout plan illustrating red line boundary

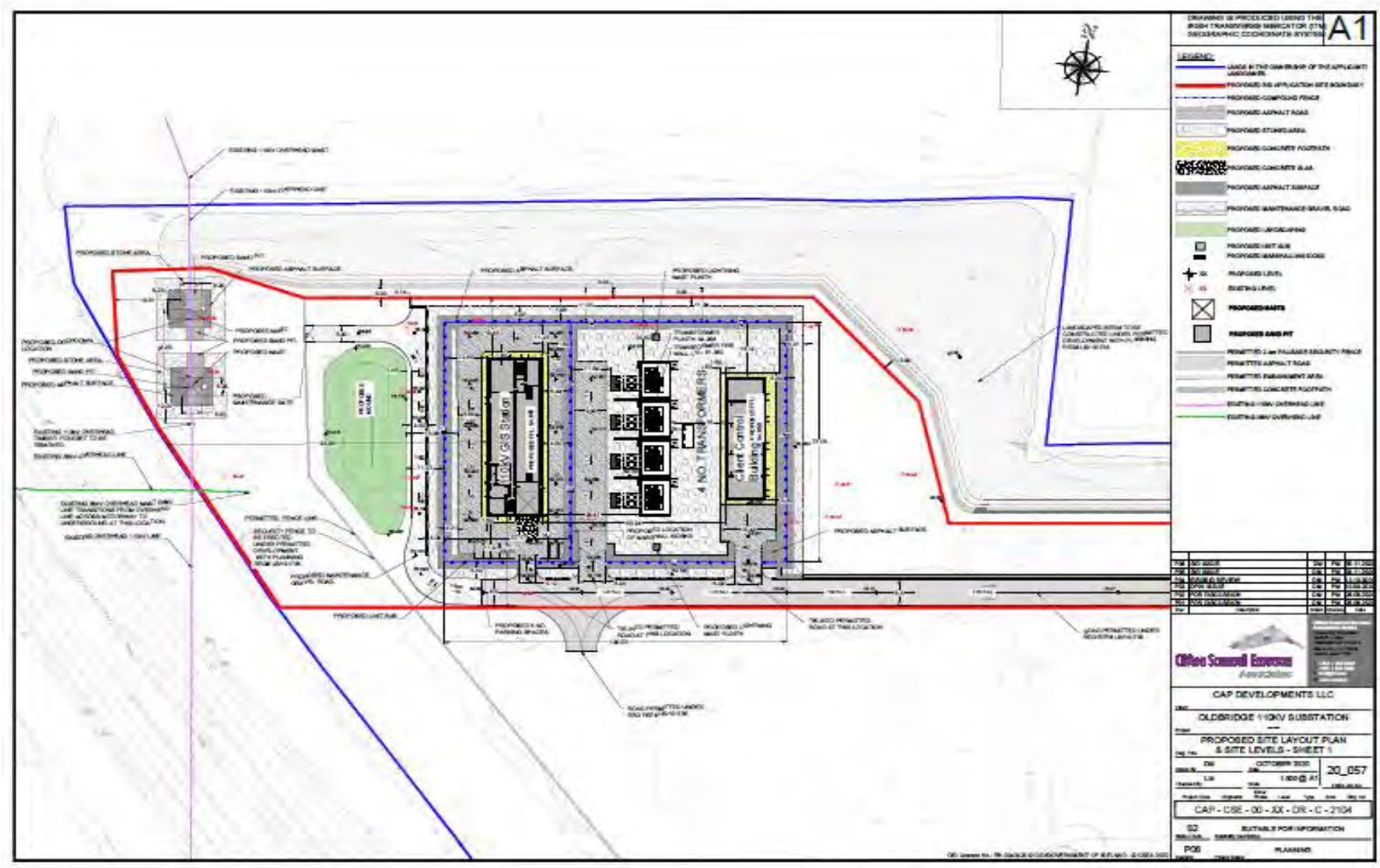

Figure 2.2a Proposed Site Layout

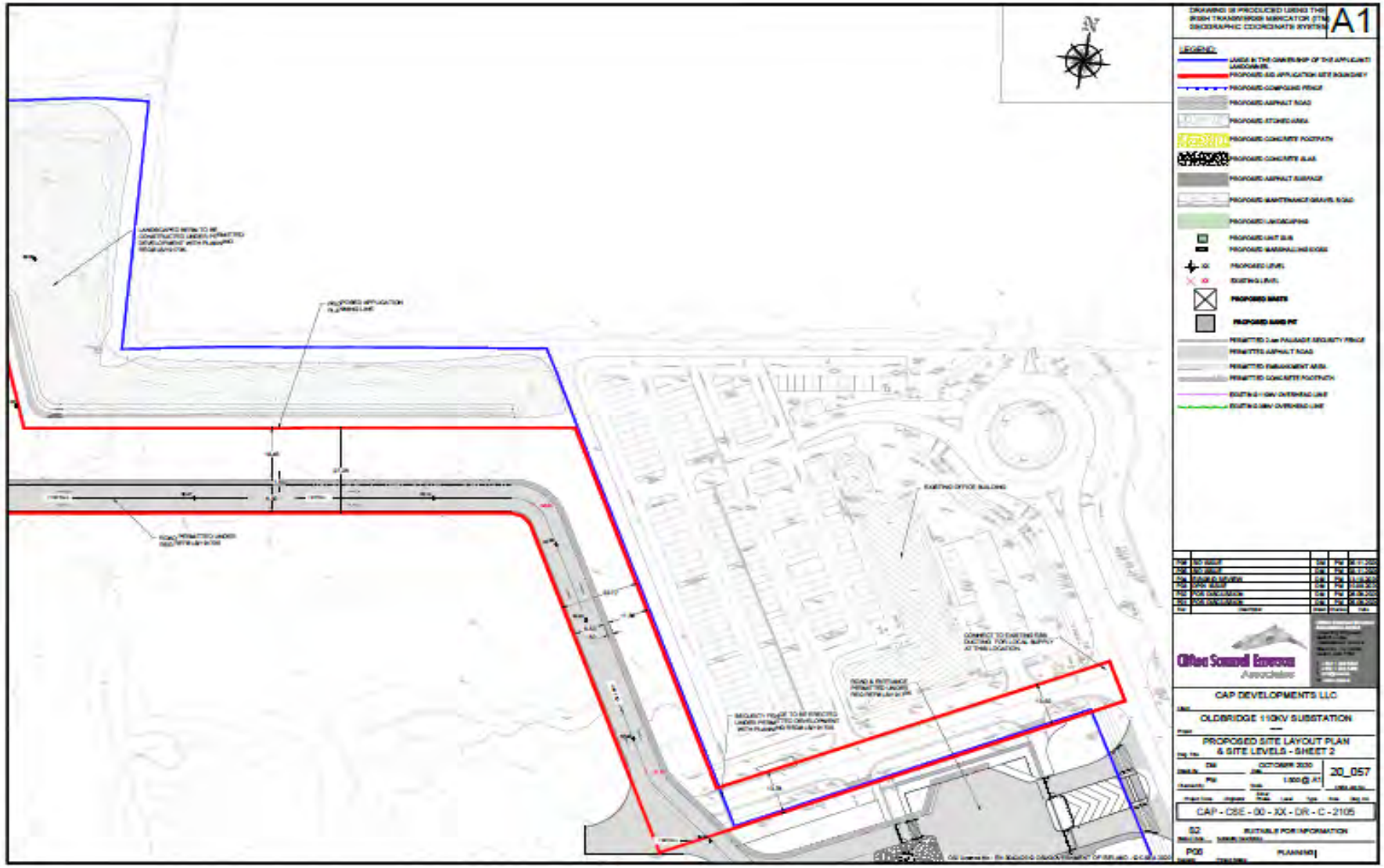

Figure 2.2b Proposed Site Layout showing route of the 49kVA grid route.

The design of the two proposed underground 110kV transmission lines will comprise a double 110kV circuit installed underground in high-density polyethylene (HDPE) ducting. The 110kV cables will be a standard XLPE (cross-linked polyethylene) copper cable. XLPE does not contain oil, therefore there is no risk of migration of oil into the ground in the event of a failure (such as a short circuit, a joint fail, a termination failure etc.). These types of failures would not have the potential to result in a perceptible environmental impact.

The trenches to install the 110kV transmission lines will run parallel to each other along the length of the route, the separation of the 2 circuits will vary from 4m to c. 8m the separation is depending on the existing ground conditions and existing underground services. The optimum depth of excavation required to facilitate installation of the ducting, as specified by CSEA, is 1.2m below ground level but may increase to up to c. 1.5m. The typical width of each trench is 1.0m, however this may vary depending on ground conditions and existing services. Between five and six separate ducts will be installed in each trench. For the purposes of this assessment, reference to the 'transmission line' includes both circuits. A typical cross section of the trench is illustrated in Figure 2.3.

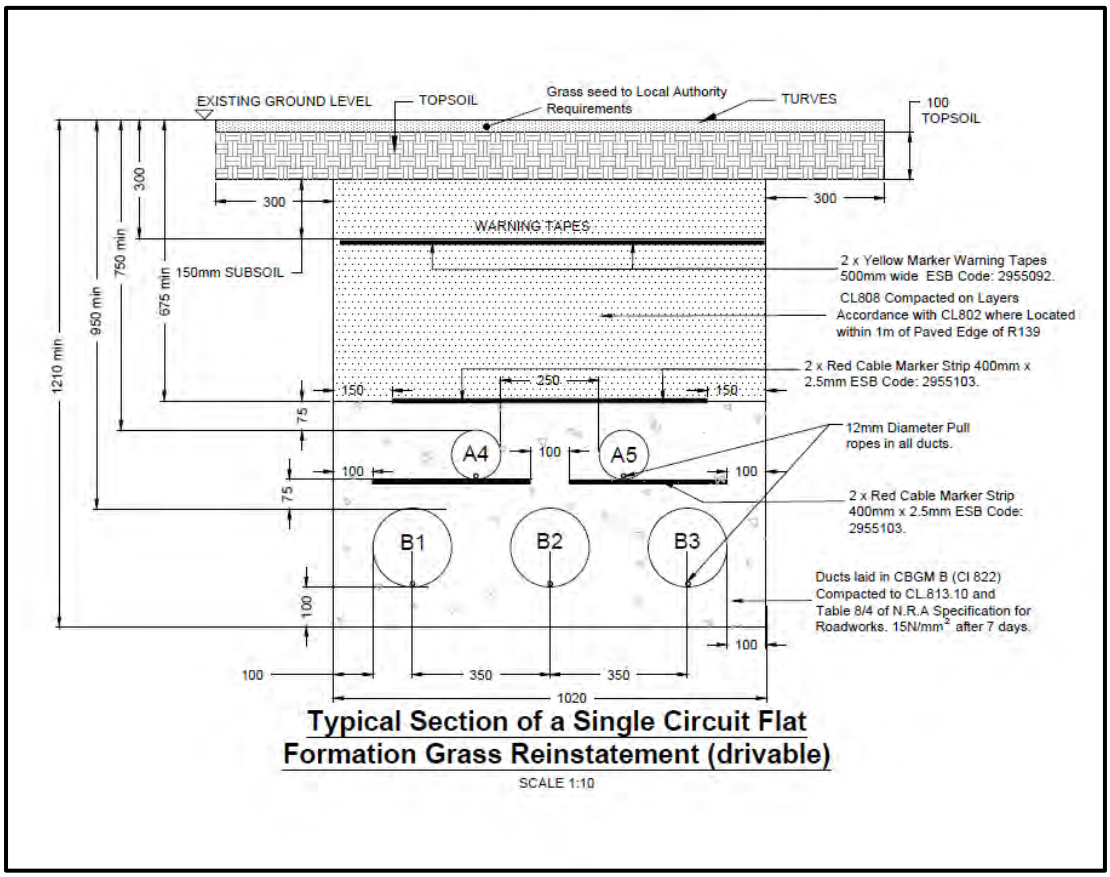

Figure 2.3 Typical Cross Section of Trench for Underground Cable (*Source: CSEA, January 2020*)

The design of the 49kVA underground cable will comprise a looped 10kV circuit installed underground in uPVC ducting. The 10kV cables will be a standard XLPE (cross- linked polyethylene) Aluminium cable. XLPE does not contain oil, therefore there is no risk of migration of oil into the ground in the event of a failure (such as a short circuit, a joint fail, a termination failure etc.).

The installation of the uPVC ducting will require the excavation of one trench along the route; the trench will contain one 10kV circuit. Between two and four separate ducts will be installed the trench.

The optimum depth of excavation required to facilitate installation of the ducting is 0.95-1m below ground level (bgl) but may increase to up to c. 1.5m at utility crossings. The optimum width of the trench is c. 0.6m, however this may vary depending on ground conditions and existing services to up to c. 1m. A typical cross section of the trench is illustrated in Figure 2.4.

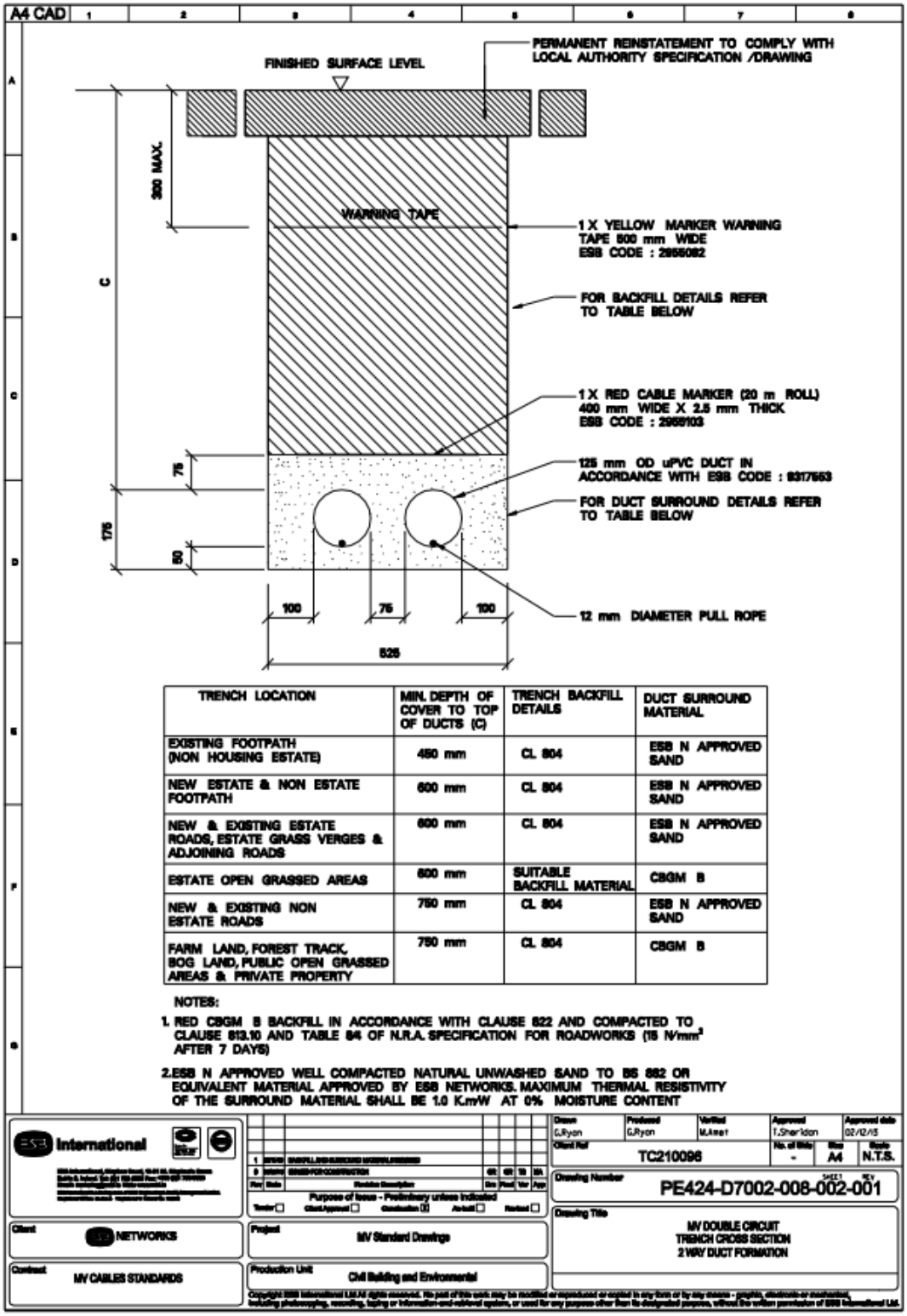

Figure 2.4 Typical Cross Section of Trench for Underground Cable (*Source: ESBN, May 2019*)

2.2.3 Proposed Site Infrastructure and Secondary Facilities

2.2.3.1 Surface Water Drainage

Rainwater runoff from the proposed 110kV GIS substation will discharge to the surface water drainage network for the Permitted Development (MCC Planning Ref. LB/191735). The surface water drainage network for the Permitted Development was designed to accommodate surface water drainage from the Proposed Development., As such, there is capacity for the Permitted Development to accommodate runoff from the Proposed Development. This is further described in Chapter 7 and the *Engineering Services Report – Water and Drainage Services*, prepared by Clifton Scannell Emerson Associates (CSEA).

Stormwater will be attenuated within a detention basin (with a capacity of 7,549m^3). In addition, permeable paving will be installed at the site under car parking areas which will provide additional attenuation. The attenuated storm water will be discharged to the existing IDA stormwater system via storm water rising main at a controlled rate of 39.07 l/s, which is the equivalent greenfield runoff rate for an area of 18.6 ha, which is the Permitted Development site catchment area. A shut off valve is included in the design to ensure that discharges from the overall landholding can be shut off in the event of a fire or other form of surface water contamination event.

The drainage design for the Proposed Development includes a Class 1 full retention separator downstream of the fuel unloading area and a Class 1 bypass interceptor upgradient of the detention basin to ensure the quality of surface water discharge is controlled prior to attenuation and discharge offsite. In addition, a hydrodynamic solid separator is provided within the drainage network to screen rubbish, debris and sediment from the surface water runoff before it enters the attenuation basin.

Further detail on the storm water drainage system and the basis of its design is provided in the *Engineering Services Report – Water and Drainage Services*, prepared by Clifton Scannell Emerson Associates (CSEA), which accompanies this planning application. Chapter 7 Hydrology and Chapter 14 Material Assets address the potential impacts of the Proposed Development on storm water drainage.

2.2.3.2 Foul Drainage

Domestic effluent arising from the facility building will be collected in a proprietary pumping system which will pump via a 63mm dia rising main and connect to the newly constructed foul drainage network designed as part of the Permitted Development and discharged to the existing IDA foul sewer before out falling by gravity to the MCC foul sewage network. The wastewater discharged (peak 5l/sec and average flow 0.6l/sec) from the site will ultimately discharge to the Drogheda Wastewater Treatment Plant (WWTP). Irish Water (IW) provided a confirmation of feasibility (CoF) for the Permitted Development (including the requirements of the Proposed Development) 2019 (IW Reference Number: CDS19007702). A copy of the IW connection agreement and CoF is included in Chapter 14, Appendix 14.1.

Further detail in relation to wastewater emissions is presented in the CSEA *Engineering Services Report – Drainage and Water Services,* which accompanies this planning permission and in Chapter 7 Hydrology and Chapter 14 Material Assets of this EIA Report. There are no process wastewater emissions to the foul drainage system.

2.2.3.3 Water Supply

Water will only be required for the welfare facilities at the GIS substation. This will be provided via a connection to the watermain for the Permitted Development. The

water demand for the Proposed Development will be minimal due to the low frequency of use of the welfare facilities. Chapter 6 Hydrology and Chapter 13 Material Assets address the impacts on water supply.

The underground double circuit transmission cables from the proposed substation and the underground 49kVA cable installation from the existing substation do not require any water supply.

Irish Water (IW) provided a confirmation of feasibility (CoF) for the Permitted Development (including the requirements of the Proposed Development) (IW Reference Number: CDS19007702). A copy of the IW connection agreement and CoF is included in Chapter 14, Appendix 14.1.

2.2.3.4 Electricity

The proposed 110kV GIS substation and two no. 110kV transmission line are designed to support power demand for the Permitted Development and with two bays for future development. The 49kVA cable installation is intended to provide a house power supply to the proposed GIS substation.

2.2.3.5 Fire Water System

A fire water ring main for the Permitted Development will be extended to the GIS Substation as required to provide firefighting water to hydrants in the event of a fire.

2.2.3.6 Security, Access and Lighting

The main site access is along the eastern boundary of the site. It forms a T-junction with the IDA Business and Technology Park access road, at a point approximately 260 metres north of Donore Road. The IDA Business and Technology Park access road, in turn, connects to Donore Road at its roundabout junction with Donore Road and the Drogheda Retail Park access road. A maximum speed limit of 20km/hour will be in place on the access road. A pair of access gates will be manned and maintained by security personnel at this entrance 24/7. (The access gates have been designed to act as a truck lock as and when required).

Construction traffic will enter and exit the site via the construction site access, which forms a roundabout junction with the IDA Business and Technology Park access road, at a point approximately 100 metres north of Donore Road. Once construction of the Proposed Development is complete, this additional entrance will be for emergency access and occasional HGV deliveries.

A record will be maintained of all personnel visiting the site (including deliveries etc.). All visitors to site will be monitored and supervised at all times.

A 2.4m high security fence will be constructed around the perimeter of the Proposed Development.

CCTV cameras will be installed at strategic locations around the facilities to ensure all boundaries and approaches to the facilities are adequately monitored. A motion detection system (passive infra-red system known as a “red wall”) combined with CCTV and security lighting will be utilised.

The lighting design (both security and environmental lighting) has been assessed and optimised for the site, to ensure no obtrusive glare, light spillage or other light nuisance on neighbouring residential receptors or business users. These sensitive receptors are discussed in more detail in Chapter 5 (Human Health and Population).

Access arrangements and potential traffic safety impacts are considered in Chapter 13 Traffic and Transportation.

Car parking (5 no. spaces) will be provided in the GIS building for maintenance staff and visitors attending the site.

2.2.3.7 Oil Storage

There is a requirement for oil storage for the transformers. The maximum storage is c. 36 m^3 and this will be stored within a bunded area which is greater than 110% of the storage capacity. A float switch will operate to ensure that any collected water is pumped to sewer. A backup generator will also have a small bunded diesel tank with a maximum storage is c. 1 m^3. This is located within the building structure.

2.2.4 Indicative Future Development

The EIA Report for the Permitted Development (MCC Planning Ref.: LB/191735) illustrated an indicative masterplan for future development of data storage facility buildings, See Figure 2.5.

Figure 2.5. Indicative Masterplan (Source: MCA December 2019)

The indicative masterplan indicates the potential for future development of two further data storage facility buildings (Buildings 2 and 3) to the north of Building 1. These may be developed by the Operator over the coming years, subject to customer demand. The design of the indicative future developments, if proceeded with, will be further developed and refined in future and will be subject a separate planning application(s) and EIA Report(s). The potential cumulative impact of the Proposed Development with the permitted and indicative future developments has been assessed in Chapter 16 (Cumulative Impacts) of this EIA Report as far as practically possible, having regard to the preliminary nature of that plan.

2.3 EXISTENCE OF THE PROJECT

Under the current Draft EPA Guidelines on the information to be contained in EIA Reports, the description of the existence of the project is required to define all aspects of the proposed lifecycle of the Proposed Development under the following headings:

- Construction;
- Commissioning;
- Operation;
- Decommissioning; and
- Description of other related projects.

The following sections present a description of each of these aspects.

2.3.1 Description of Construction

The construction of the proposed 110kV GIS substation will comprise four main stages, namely;

- Site preparation works;
- Building Structure Construction;
- Building Envelop Construction; and
- Fit Out including mechanical and electrical fit-outs and commissioning.

The construction of the 110kV cable installation and 49kVA cable installation will comprise three main stages, namely;

- Site preparation works and excavations;
- Cable installation, jointing and testing; and
- Reinstatement.

The construction of the. new cable bays at the Oldbridge substation will comprise three main stages, namely;

- Site preparation works and excavations;
- Construction of concrete bases for the electrical apparatus; and
- Fit Out Including M&E and commissioning.

Working Hours
It is anticipated that the construction of the GIS substation, the 110kV transmission lines and cable bays will be completed during normal construction hours i.e. 7am to 7pm Monday to Friday with a half day working on Saturday (8am -1pm).

However, it is possible that the appointed contractors may wish to carry out certain operations outside these hours i.e. evening hours during long summer days etc. Such occurrences will be notified to the local authority, where required and generally kept to a minimum. Where they do occur, contractors will ensure they take place over as short a timeframe as possible and as such are unlikely to cause excessive disturbance. The impact of Covid -19 may require a potentially prolonged construction schedule

Staffing
The following construction data has been used to estimate peak daily construction traffic (assumed to occur during civil works period for substation building):

- Average construction staff: 15-20;
- Peak construction staff (peak staff levels during civil works): 30;

Construction Schedule

- Application for Planning Permission – October 2020
- Commence Site Construction works (subject to grant of planning permission) – Start of Q2 2021
- Completion of Construction and Commissioning – Q2 2022

Site Preparation
The construction of the Permitted Development (MCC ref: LB/191735)) commenced in Q3 2020 with the completion of construction and commissioning of the remaining data halls targeted for Q2 2022.

It is proposed that the accesses and haul roads for vehicles, the contractors' compound and fencing that have been established for the construction of the Permitted Development will be utilised for the Proposed Development.

The construction compound will facilitate office, portable sanitary facilities, equipment storage, parking, etc. for contractors. It will be used for the duration of the works.

The site preparation phase for the GIS substation will involve site clearance, excavations and levelling of the site to the necessary base level for construction, surveying and setting out for structures and any rerouting of services/connections to services.

A combination of bulldozer, excavators, trucks and other soil shifting plant will commence the main site clearance and levelling aspects.

The site preparation required for Proposed Development will be limited with minimal site clearance required.

Building Construction Works

Foundations and Structure
Following the completion of site clearance and levelling, all structures will require foundations to structural engineer specifications. Building structures will comprise standard structural steel frames.

It is anticipated that foundations will require moderate scale excavations. Based on site conditions (see Chapter 6), no rock breaking or dewatering will be necessary.

Levelling/Cut and Fill
It is envisaged that all of the spoil generated during site preparation/levelling will be removed from site (see Chapter 14). Waste Management is addressed in Chapter 15.

The importation of fill will be required to facilitate construction of the Proposed Development. The project engineers, CSEA, have estimated that the importation of up to 4,800m^3 of fill material and exportation of 17,000 m^3 will be required.

Contractors will be required to submit and adhere to a method statement (including the necessary risk assessments) and indicating the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.

Any temporary storage of spoil required will be managed to prevent accidental release of dust and uncontrolled surface water run-off which may contain sediment etc. (refer to Chapters 5 & 6 for further details).

Building Envelopes and Finishes
The outer finishing of the building envelopes are intended to be of a similar quality and appearance to the Permitted Development.

Reinstatement along the 49kVA cable installation route will be as current, i.e. grassed in greenfield areas and hardstand along paved areas and roads.

Roads, Services and Landscaping
The main internal road system will completed as part of the Permitted Development.

The Proposed Development was considered in the design of the Landscaping for the Permitted Development. Landscaping will be undertaken in accordance with the landscape masterplan for the Permitted Development (refer to Chapter 11 Landscape and Visual Impact).

Material Sourcing, Transportation and Storage

Materials
Key materials will include steel, concrete, composite cladding, piping, electrical cabling, process equipment and architectural finishes. A 'Just in Time' delivery system will operate to minimise storage of materials on site.

Sourcing
Where possible it is proposed to source general construction materials from the Dublin area to minimize transportation distances.

Storage
Aggregate materials such as sands and gravels will be stored within a secure compound area to prevent contamination. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage.

Transportation
Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape of material along the public roadway.

Waste Management
Chapter 15 contains a detailed description of waste management relating to construction of the Proposed Development. A site-specific Construction and Demolition Waste Management Plan is included as Appendix 15.1 of this EIA Report. This C&D Waste Management Plan will be refined and updated in advance of the works to ensure best practice is followed in the management of waste from the Proposed Development.

Noise, Vibration and Dust Nuisance Prevention
With regard to construction activities, reference will be made to BS 5228 (i.e. BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014) for noise and vibration control on construction and open sites, which offers detailed guidance on the control of noise and vibration from demolition and construction activities. A number of mitigation

measures will be applied during the construction of the Proposed Development, including:

- Limiting the hours during which site activities which are likely to create high levels of noise are permitted, e.g. soil levelling/excavations;
- Establishing channels of communication between the contractor/developer, local authority and residents;
- Appointing a site representative responsible for matters relating to noise and vibration, and;
- Monitoring typical levels of noise during critical periods and at sensitive locations.

The contractor will be required to implement works in accordance with a Construction Environmental Management Plan (CEMP) to minimise the impact of all aspects of the construction works on the local environment. The CEMP will include mitigation measures for emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction. A draft CEMP is provided with the planning documentation.

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These will be defined in the Contractors Environmental Management Plan (CEMP) based upon the equipment proposed by the contractor:

- Selection of plant with low inherent potential for generation of noise;
- Erection of barriers as necessary around items such as generators or high duty compressors, and;
- Siting of noisy plant as far away from sensitive receptors as permitted by site constraints.

Noise and vibration control measures are discussed in detail in Chapter 10 Noise & Vibration.

The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations. The majority of dust produced will be deposited close to the generated source.

In order to ensure that no dust nuisance occurs, a series of measures will be implemented and included in the CEMP, comprising:

- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only;
- If required, any area/road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions;
- Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. Indeed, on any un-surfaced site road, this will be 10km/hour, and on hard surfaced roads as site management dictates;
- In dry conditions vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- Wheel washing facilities will be provided for vehicles exiting the site to ensure that mud and other wastes are not tracked onto public roads;
- Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary; and

- At all times, these procedures will be strictly monitored and assessed. In the event of dust emissions occurring outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented to rectify the problem before the resumption of construction operations.

Dust nuisance control measures are discussed in further detail in Chapter 9 Air Quality and Climate.

Water Discharges
Portable welfare and sanitary facilities will be provided for the construction workers at the construction compound for the Permitted Development.

Any surface water run-off will be adequately contained and treated prior to being discharged into the FCC drainage network. See Chapter 7 Hydrology for a full description of mitigation measures proposed.

Construction Impacts
Each of the following EIA Report chapters (Chapters 4-14) includes an assessment of the potential impact of construction works on their individual environmental aspect and set out the relevant mitigation measures relating to those aspects.

The primary potential effects from construction are all short-term and are anticipated to include;

- Effects in terms of nuisances relating to the air quality of the environs due to dust and other particulate matter generated from excavation works and effects on the noise environment due to plant and equipment involved in construction;
- Effects on the land, soils, geology & hydrogeology of the site during construction i.e. some loss of protection of the underlying aquifer to contaminants during site clearance, levelling and excavations etc.; and
- Effects on the local road network and its environs due to construction workers and other staff attending site during preparation, construction and commissioning phases.

Mitigation measures to address each of these potential short-term effects are presented in each individual EIA Report chapter and contained in the CEMP.

2.3.2 Description of Commissioning

Once the construction of the Proposed Development is completed, ESB Networks will be mobilised to complete the commissioning. Commissioning will be carried out over a period of 6 months. Commissioning works primarily involve a suitably qualified individual connecting the relevant cables to a switchgear within the substations. Following this, energisation can take place.

As there is no requirement for chemicals usage and minimal access to the route by personnel there is no likely environmental effect as a result of commissioning.

Any hard landscaping and final soft landscaping will be completed.

Operation of the Proposed Development

2.3.3. As stated in Sections 1.1 and 1.3 of Chapter 1, EirGrid will be the transmission system operator (TSO) and ESB Networks will be the transmission asset owner (TAO). EirGrid will operate transmission stations, including the proposed new GIS

substation, remotely from their control centres. However, ESB Networks will carry out all local operations on Eirgrid's behalf.

ESB Networks will undertake local operational activities from the substations with only interim inspections along the transmission line and MV cable installation.

The estimated staff required are outlined in the following paragraphs.

110kV GIS substation
The 110kV GIS substation does not require any full-time staff to operate it. However, maintenance of the substation will be required by ESB Networks, including a routine weekly inspection, and a more comprehensive inspection once per year. The weekly inspection of the GIS substation will take a maximum of 8 hours on a single day and will be conducted by up to 2 staff.

In addition to the weekly inspections, more comprehensive maintenance works will take place annually on each cubicle. This will require up to 4 staff to conduct testing at the substation over a maximum period of 15 days (120 hours).

It is expected that the proposed 4 new transformers (to be located east of and adjacent to the 110 kV GIS substation) will also be inspected during this time.

Underground 110kV Transmission Line
Once constructed, the underground transmission line will not require any staff to operate it. Instead, two ESB Networks maintenance staff will carry out a routine inspection of the asset one year after completion and once every three years thereafter.

Underground 49kVA Cable Installation
Once constructed, the underground cable installation will not require any staff to operate it. Instead, two ESB Networks maintenance staff will carry out a routine inspection of the asset one year after completion and once every three years thereafter. These inspections are likely to be conducted at the same time the underground 110kV transmission line is inspected.

Traffic relating to staff movements have been assessed as part of the traffic and transportation chapter of this EIA Report (Chapter 13).

2.3.4 Decommissioning of the Proposed Development

The lifespan of the Proposed Development is not defined but it is anticipated that it will be maintained, and periodic upgrading undertaken over a long lifetime to meet future demand and upgrade in technology.

If the GIS substation is no longer required over the long term, then full decommissioning in accordance with prevailing best practice will be undertaken.

Retirement of any cables will involve decoupling the cable from the switchgear. An excavation pit of approximately 10m^2 will then be established. The cable to be retired will be identified within this excavation pit and spiked (to ensure that decoupling from the switchgear has been successful and the cable is not live). The cable will then be cut and capped to protect the exposed cable. The excavated pit can be reinstated using the excavated material, with no import of fill required. The retired cable can remain in situ in the ground, with the potential for it to be returned to operation should it be required in the future.

2.4 SUSTAINABILITY ENERGY EFFICIENCY & RESOURCE USE

Eirgrid and ESB Networks are committed to running their businesses in the most environmentally friendly way possible. ESB Networks is a subsidiary within ESB Group. The ESB Group has identified energy efficiency as a strategic priority within its Brighter Future strategy. ESB Group is a commercial semi-state-owned company (95% state-owned) and is committed to supporting and being exemplar in the delivery of Ireland's 2020 public sector targets. These targets, outlined in the fourth National Energy Efficiency Action Plan (2017 – 2020) (NEEAP), include an energy efficiency target of 33% for the public sector.

2.5 HEALTH & SAFETY

2.5.1 Design and Construction Health and Safety

The Proposed Development has been designed in accordance with the Safety, Health and Welfare at Work Act 2005 (S.I. 10 of 2005) as amended and the Safety, Health and Welfare at Work (General Application) Regulations 2007 to 2016 (S.I. 299 of 2007, S.I. 445 of 2012, S.I. 36 of 2016) as amended and associated regulations.

The Proposed Development has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience based on a number of similar developments.

2.5.2 General Operational Health and Safety

ESB Networks has an Environmental Safety and Health Management System (EMS) which will be implemented at the Proposed Development.

2.6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

The Proposed Development is to be located on suitably zoned lands adjacent to extensive industrial development (details of zoning can be found in Chapter 3). The Proposed Development, when operational, will generate limited additional traffic, air, noise and water emissions and wastes generation from activities etc.

During construction, there is the potential for temporary nuisance impacts from traffic, dust, noise and construction waste, if not carefully managed. All contractors will be required to implement a CEMP to ensure each of these potential impacts are minimised.

Each chapter of this EIA Report assesses the potential impact of the construction and operation of the Proposed Development on the receiving environment. Please refer to each specialist chapter respectively.

2.7 MAJOR ACCIDENTS/DISASTERS

The 2014 EIA Directive and associated Draft EPA EIA Guidelines require that the vulnerability of the project to major accidents, and/or natural disasters (such as earthquakes, landslides, flooding, sea level rise etc.) is considered in the EIA Report. The site has been assessed in relation to the following external natural disasters;

landslides, seismic activity and volcanic activity and sea level rise/flooding as outlined below. The potential for major accidents to occur at the data storage facility has also been considered with reference to Seveso/COMAH.

Landslides, Seismic Activity and Volcanic Activity
There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity. Further detail is provided in Chapter 6 Land, Soils, Geology & Hydrogeology.

Flooding/Sea Level Rise
The potential risk of flooding on the site was also assessed. A Stage 1 Flood Risk Assessment was carried out and it was concluded that the Proposed Development is not at risk of flooding. Furthermore, it is not expected that the Proposed Development would adversely impact on flood risk for other neighbouring properties. Further detail is provided in Chapter 7 Hydrology and Appendix 7.2 Stage 1 Flood Risk Assessment.

Seveso/COMAH
The Proposed Development will not be a Seveso/COMAH facility. The only substance stored on site controlled under Seveso/COMAH will be diesel for a single back up generator (tank capacity 1m^3) and the transformers (tank capacity 36m^3) and the amounts proposed do not exceed the relevant thresholds of the Seveso directive.

Minor Accidents/Leaks
There is a potential impact on the receiving environment as a result of minor accidents/leaks of fuel/oils during the construction and operational phases. However, the implementation of the mitigation measures set out in Chapters 6 and 7 will ensure the risk of minor accidents/leaks of fuel/oils is low and that the residual effect on the environment is imperceptible.

2.8 RELATED DEVELOPMENT AND CUMULATIVE IMPACTS

The Proposed Development is designed to support power demand for the permitted data storage development and potential development of the future indicative data storage buildings south of the GIS substation (which will be subject to separate planning applications and EIA Reports), within the overall landholding. The 49kVA cable installation is intended to provide a house power supply to the proposed GIS substation. The cumulative impact of the Proposed Development with permited and future indicative Masterplan developments within the overall landholding have been considered in Chapter 16 Cumulative Impact, to the extent possible, having regard to the preliminary nature of the future indicative plans for the overall landholding.

As part of the assessment of the impact of the Proposed Development, the cumulative impacts of the Proposed Development with other developments that are existing, currently permitted or under construction within the vicinity of the site, neighbouring industrial parks and surrounding areas have been assessed. A list of the other developments considered is provided in Chapter 3 Planning and Development Context. The cumulative impact assessment of the Proposed Development with these other developments is provided in Chapter 16 of this EIA Report. With mitigation for each environmental aspect, there are no predicted significant cumulative effects.

3.0 PLANNING AND DEVELOPMENT CONTEXT

3.1 INTRODUCTION

This chapter will examine the Proposed Development within the context of the Meath County Council (MCC) planning policy.

Following consultation with An Bord Pleanála (ABP) by conference call on August 11th 2020, it was confirmed that the Proposed Development meets the relevant criteria and constitutes a Strategic Infrastructure Development (SID) under Section 182A & 182B of the Planning and Development Act 2000 (as amended).

The site for the Proposed Development is situated within the administrative area of MCC, and therefore the Planning and Development Framework with which the Proposed Development complies is defined by the Meath County Development Plan 2013 – 2019.

The following sections describe how the Proposed Development is in compliance with the stated and statutory requirements of MCC with respect to planning and sustainable development.

The project is designed to support the power demand of the data storage facility development permitted under Meath County Council Reg. Ref LB/191735 and to serve the power needs of potential future development on the overall landholding of c 19.46 hectares at the Drogheda IDA Business and Technology Park.

3.2 NATIONAL, REGIONAL AND LOCAL PLANNING CONTEXT

National Planning Framework – Ireland 2040

The National Planning Framework (herein referred to as the NPF) was published in February 2018 and contains policies which are supportive of the development of information and communications technology (ICT) infrastructure, with particular reference made to data centres. National Strategic Outcome 6 of the NPF relates to the creation of *"A Strong Economy Supported by Enterprise, Innovation and Skills"*. This strategic outcome is underpinned by a range of objectives relating to job creation and the fostering of enterprise and innovation.

The following objective, relating to ICT infrastructure (including data centres) is included under National Strategic Outcome 6:

"Promotion of Ireland as a sustainable international destination for ICT infrastructures such as data centres and associated economic activities."

The Proposed Development comprises a substation and associated ancillary development designed to support ICT and surrounding future development. A full description of the Proposed Development is available in Chapter 2 Description of the Proposed Development.

Draft Regional Spatial and Economic Strategy for the Eastern and Midlands Regional Assembly

The Draft Regional Spatial and Economic Strategy (RSES) for the Eastern and Midlands Regional Assembly (EMRA) includes Regional Policy Objective (RPO) 8.23 which states the following:

"Local Authorities shall:

- *Support and facilitate delivery of the National Broadband Plan.*
- *Facilitate enhanced international fibre communications links, including full interconnection between the fibre networks in Northern Ireland and the Republic of Ireland.*
- *Promote and facilitate the sustainable development of a high-quality ICT network throughout the Region in order to achieve balanced social and economic development, whilst protecting the amenities of urban and rural areas.*
- *Support the national objective to promote Ireland as a sustainable international destination for ICT infrastructures such as data centres and associated economic activities at appropriate locations."*

Regional Planning Guidelines for the Greater Dublin Area (2010 – 2022)

The Regional Planning Guidelines (RPGs) for the Greater Dublin Area 2010 – 2022 set out the planned direction for growth up to 2022 by giving regional effect to the National Spatial Strategy (NSS). The RPGs provide an overall strategic context for the Development Plans of each local authority in the Greater Dublin Area (GDA) including enterprise and employment creation.

The subject site is located within the Large Growth Townland of Drogheda. It is noted that Drogheda, primarily located within the Border Region, also extends into part of Co. Meath, and part of Co. Louth. As a Large Growth Town, Drogheda is identified as an economically active town supporting surrounding areas.

The RPGs supports economic development within the GDA and clustering of development within identified strategic employment areas.

Meath County Development Plan 2013-2019

The Meath County Development Plan 2013-2019 (MCDP) sets out a coherent spatial planning framework for the County within the context of national and regional policies.

The plan covers the administrative area of County Meath situated in north Leinster, along the east coast of Ireland. The county occupies a land area of over 230,000 hectares and is the second largest county in Leinster. It adjoins Dublin to the south and this geographical proximity and the strong functional relationship between the two counties results in Meath being a vital component of the GDA.

The aim of the MCDP is to drive the present-day evolution of the county and to establish a framework for the coordinated and sustainable economic, social, cultural and environmental development of County Meath.

The relative policies and objectives of the MCDP in relation to Water, Drainage, Environmental Services, Transport, Waste, Cultural Heritage, Natural Assets and Environment have been addressed in the relevant chapters of this EIA Report.

Zoning

The application site is subject to the E1 zoning objective (as per the consolidated zoning maps for the Development Plan as varied) (as shown in Figure 3.1), with a stated objective to "*facilitate opportunities for high technology and major campus style office based employment within high quality and accessible locations*". The proposal constitutes electricity transmission infrastructure which will support permitted and future high technology development in the area.

Figure 3.1 *Extract from Zoning Map of the Meath County Development Plan 2013-2019 (approximate extent of the subject site outlined in red)*

E1 zoning provides for the following range of permissible uses:

"Bio Technology Manufacturing, Call Centres, Childcare Facility, Convenience Outlet, Green / Clean Light Industries, Education (third level), High Technology Manufacturing, Information Communication Technologies, International and National Traded Services, Knowledge Based Economic Development, Offices 100 to 1,000 sq. m., Offices >1,000

sq. m., Medical and Related Uses, Research & Development, Science & Technology Based Enterprise, Telecommunication Structures, Water Services / Public Services."

The following uses are open for consideration under the E1 zoning objective:

"Uses Advertisement and Advertising Structures, Conference/Event Centre, Education, Enterprise / Training Centre, Leisure Facilities, Hotel / Aparthotel, Industry – Light, Industry – General, Restaurant / Café, Petrol Station, Transport Depot/Logistics, Warehousing."

Public services are permitted in principle under the E1 zoning objective pertaining to the subject site. The proposed development will comprise public services in the form of electricity infrastructure which will form part of the National Grid.

The Development Plan provides further guidance on the E1 zoning objective as follows:

"E1 zones facilitate opportunities for high end, high value added businesses and corporate headquarters. This adheres to the concept of 4th Generation Science & Technology Parks. It is envisaged that such locations are suitable for high density employment generating activity with associated commercial development located adjacent to or in close proximity to high frequency public transport corridors. This will apply to suitable lands in Navan, ***Drogheda*** *and Dunboyne. The Maynooth Environs Local Area Plan also contains E1 zones."* (emphasis added)

The proposed development constitutes infrastructure to support high technology, high value-added uses, which will generate employment at the subject site and the surrounding area, thereby according with the foregoing.

Economic Development Strategy

It is the policy of MCC to facilitate economic development and the growth of employment in the county through support for objectives which promote economic, social, and cultural development and in assisting the provision of employment opportunities for all.

The Proposed Development is located in Drogheda, one of two Large Growth Town identified in the MCDP. Drogheda is also considered in the MCDP as a Primary Economic Centre. The Proposed Development is supported by objectives and policies outlined in the MCDP, which have been summarised in Table 3.1 below.

The Proposed Development will act on the potential of undeveloped lands and provide construction jobs, and direct and indirect employment in the area through facilitating the permitted data storage facility development and future development in the area.

Table 3.1 MCDP Relevant Economic Development Policies and Objectives

Policy/Objective	Summary	Compliance
ED POL 3	To encourage and facilitate the successful development of the 5 no. key strategic employment sites in the County as identified in the Economic Development Strategy for County Meath 2014-2022. These are to develop as regional anchors of enterprise and employment creation, promoting a mix of employment types and thereby reducing the need for residents of County Meath to commute outside the County for employment.	The Proposed Development is located within the South Drogheda (IDA Business & Technology Park) key strategic employment site.
ED OBJ 3	To ensure that sufficient and suitable land is zoned for sustainable large scale and general industry at the major employment centres of Navan, Drogheda Environs, Ashbourne, Dunboyne and Kells and to a scale and extent befitting their respective roles in the Economic Development & Settlement hierarchies.	The Proposed Development will realise the potential of the currently undeveloped lands within the primary economic growth area and bring employment to the area.

The Economic Development Strategy for County Meath 2014-2022 (EDS) sets evidence-based measures aimed at accelerating the economic transformation, revitalisation and sustainable development of County Meath.

The locality of the Proposed Development within the environs of Drogheda has been identified as a main designated centre of economic activity in Meath.

Owing to its zoning and location, the Proposed Development site is a strategic site with the potential for development. Strategic sites are opportunities for economic and employment development around the county, including for the ability to attract more foreign direct investment into the county.

3.3 SUSTAINABLE DEVELOPMENT

Irelands Framework for Sustainable Development by the Department of the Environment, Community and Local Government, *'Our Sustainable Future',* launched in 2012 with subsequent progress report in 2015. It provides a framework to ensure that development is undertaken in a sustainable manner.

'Our Sustainable Future' aims to ensure that development is carried out sustainably and in an environmentally sound manner which includes optimisation of natural resources, minimisation of waste, safe and sparing use of chemicals and the application of clean technology.

All of these aspects will be integral considerations in the construction and operation of the Proposed Development on a day to day basis and are addressed within this EIA Report where appropriate.

3.4 PLANNING PERMISSIONS

As part of the assessment of the impact of the Proposed Development, account has been taken of developments that are currently permitted, or under construction and substantial projects for which planning has been submitted within the neighbouring industrial parks and surrounding areas.

The proposed site is located in an area zoned as a Strategic Employment Zone (High Technology Uses) and is located within the Drogheda IDA Business and Technology Park, a designated industrial park.

The MCC Planning Department website was consulted in order to generate a list of granted planning permissions from the surrounding areas of the Proposed Development within the previous five years (since September 2015). The areas considered were Rathmullan and Drogheda. There are residential estates to the north of the Proposed Development site as indicated in Chapter 2 but any permission in these estates are on a small scale and are not considered noteworthy in the context of this assessment and will have minimal environmental impact. The outcome of the planning search is presented in Appendix 3.1.

As the site is within close proximity to the MCC and Louth County Council (LCC) administrative boundaries, the LCC website was also consulted. This includes a search for planning permissions granted within the last five years within Drogheda. Similar to the above paragraph, there are a number of residential permissions to the east of the Proposed Development site that have been omitted due to their small scale. Appendix 3.2 presents a list of the notable applications to LCC (or An Bord Pleanála (ABP), where indicated) within the past five years.

The developments listed in Appendices 3.1 and 3.2 have been considered where appropriate throughout the EIA Report, in particular in the traffic assessment in Chapter 13 (Traffic and Transportation) and in the cumulative impact assessment in Chapter 16 (Cumulative Impact) of this EIA Report.

Site-Specific Planning History

The following section outlines the planning permissions relating the subject site and adjacent lands. Appendix 3.3 presents a summary of such applications.

As demonstrated in Appendix 3.3, there is a significant number of previous planning histories pertaining to the IDA Business and Technology Park, since the original applications for the main entrance and the site development works and infrastructure for the business park, both of which were subject to grants of permission in the year 2000.

The majority of the permissions pertaining to the site and adjacent lands have not been implemented, with the exception of the office building and associated car park located to the north east of the current application site.

EirGrid has confirmed that a programme for the delivery of the Uprate of the Platin – Drybridge 110 kV Circuit is being developed, however works are expected to be

completed by 2024. Subject to consent, the data centre project is expected to be operational by 2023. The proposed works occur on the Platin – Drybridge 110 kV Circuit and whilst details are not known at this stage, the uprate works will likely comprise recapping of shear blocks at the base of OHL structures and other essential maintenance works including painting, repair and or replacement of conductors, fittings, insulators and hardware, rakers and other members, signage and notices. The replacement or addition of steel towers and / or wood polesets may also be necessary as part of the works. The uprate project will be subject to separate Screening for Appropriate Assessment and Environmental Impact Assessment Screening by EirGrid to examine and assess the potential effects on European Sites and environment generally, alone and in combination with other plans and project.

3.5 CONSULTATION

AWN, the Applicant and the project team have liaised with An Bord Pleanala (ABP) in advance of lodgement of the Proposed Development on August 11th, 2020. Previously consultation meetings were held with Meath County Council as part of the application for the permitted data storage facility development in which the future GIS substation development was shown as part of future infrastructure on the 23rd October 2019 and 27th November 2019.

AWN and the other respective EIA contributors/authors have incorporated advice and comments received into the relevant chapters of this EIA Report.

3.6 RELEVANT PLANNING HISTORY

Planning history for relevant development in the IDA Business and Technology Park is presented below. Appendix 3.1 -3.3 presents developments permitted in the surrounding area.

Meath County Council Reg. Ref.: LB/191735 – Permitted Data Storage Facility Development

On the 31st of March 2020, a final grant of permission was issued by the Planning Authority for a data storage facility development. The Permitted Development was described as follows within the public notices:

- *"Alterations to existing road infrastructure within the site and clearance of the site (including removal of existing internal roadways and removal / diversion of services) to make way for the Proposed Development;*
- *Construction of a two storey (with mezzanine levels at both storeys) data storage facility building with a maximum overall height of c. 25 metres, containing data halls, associated electrical and AHU Plant Rooms, a loading bay, maintenance and storage space, office administration areas, screened*
- *"Alterations to existing road infrastructure within the site and clearance of the site (including removal of existing internal roadways and removal / diversion of services) to make way for the Proposed*

Development;

- *Construction of a two storey (with mezzanine levels at both storeys) data storage facility building with a maximum overall height of c. 25 metres, containing data halls, associated electrical and AHU Plant Rooms, a loading bay, maintenance and storage space, office administration areas, screened*

  plant and solar panels at roof level, all within a building with a total gross floor area (GFA) of c. 28,573 sq.m;

- *Emergency generators (26 no.), emission stacks and associated plant are provided in a fenced compound adjacent to the data storage facility, along with a single emergency house supply generator;*
- *A 6 MVA substation and associated 6MVA electricity connection;*
- *A water sprinkler pump room, MV Building, unit substation, water storage tanks, humidifier tanks and diesel tanks and filling area;*
- *Modification of the existing entrance to the subject site (from the estate road to the east), which will function as a secondary entrance providing for emergency and construction access. A new main entrance and access control point to the lands is proposed (also from the estate road to the east) and a single-storey gate house / security building at this entrance with a GFA of c. 29.5 sq.m.;*
- *Construction of internal road network and circulation areas, footpaths, provision of 50 no. car parking spaces and 26 no. cycle parking spaces within a bicycle shelter;*
- *Landscaping and planting (including provision of an additional planted berm to the northern boundary, and alterations to existing landscaping adjacent to the entrance to the Business and Technology Park), boundary treatments, lighting, security fencing, bollards and camera poles, bin store, and all associated site works including underground foul and storm water drainage network, attenuation areas, and utility cables, on an application site area measuring 19.46 hectares."*

An EIAR was submitted with the application, and the Planning Authority completed Environmental Impact Assessment of the development proposals. The EIAR made reference to the requirement for a separate future planning application for a Substation and transmission line connection to serve the data storage facility development. The Substation and transmission line development were cumulatively assessed within the EIAR and it was noted that any application for a Substation and transmission line connection would be subject to a separate Environmental Impact Assessment process.

The Permitted Development provided for a first phase of data storage facility development on a portion of a wider landholding at this location. The Permitted Development also included the development of an internal access road to serve the site of the Proposed Development.

The architectural and engineering drawings submitted under Meath County

Council Reg. Ref.: LB/191735 provided an illustrative outline of the location of the Proposed Development. An extract of the architectural site layout plan for the Permitted Development is provided below:

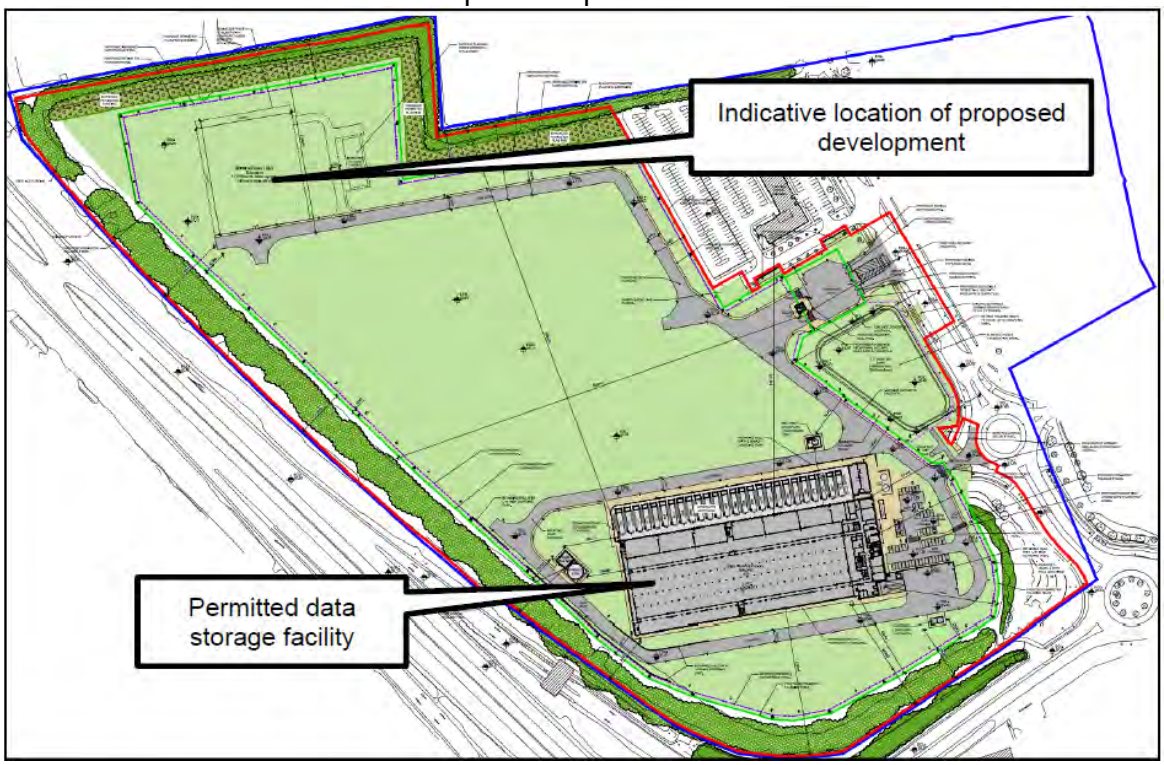

Figure 3.2 *Extract of MCA Architects Site Layout Plan Reg Ref LB/191735 Drogheda IDA Business and Technology Park.*

Meath County Council Reg. Ref.: 99/2466 – Entrance to Business and Technology Park

A final grant of permission was issued by the Planning Authority on the 9th of February 2000 for development consisting of *"a road entrance onto Drogheda to Donore Road for proposed future I.D.A. Business Park which will be subject to a separate planning application & Environmental Impact Statement*".

Meath County Council Reg. Ref.: 00/1642 – Parent Permission for Business and Technology Park

On the 11th of December 2000, a final grant of permission was issued by the Planning Authority for development comprising *"site development works for proposed IDA Drogheda Business Park, inclusive of internal roads & access junction to Donore Road, sewers, water mains, pavements & related landscaping works. An Environmental Impact Statement accompanies this application."*

This is the parent permission for the existing IDA Business and Technology Park. The grant of permission for the Business Park was subject to 35 conditions.

Meath County Council Reg. Ref. 00/4121

On the 11th of December 2000, a final grant of permission was issued by the Planning Authority for development comprising "*3 no. 4 storey office buildings, 1 single story security control building inclusive of associated hard and soft landscaping, car parking, external signage and associated site development works*".

Meath County Council Reg. Ref.: SA/30292

On the 19th of November 2003, a final grant of permission was issued by the Planning Authority for development comprising "*the erection of a 6.7m high x 2.2m wide double sided powder coated aluminium sign with lettering at the entrance of the IDA Business and Technology Park*".

Meath County Council Reg. Ref. SA/20311

On the 25th of February 2003, a final grant of permission was issued by the Planning Authority for development comprising the demolition of three existing dwellings.

Meath County Council Reg. Ref: SA/30020

On the 14th of April 2003, a final grant of permission was issued by the Planning Authority for development comprising "*an advanced business and technology unit, with a 2031 sq m. work area, 382 sq m. administration/office area with associated ancillary service and plant spaces. Car parking for 80 cars will be provided, along with a paved service yard and landscaping*".

Meath County Council Reg. Ref: SA/40284

On the 26th of August 2004, a decision to grant permission was issued in respect of a development comprising "*the erection of a 2,203 sqm, two-storey office building with third-storey plantroom, 10.120 m in overall height, with associated access roads, car-parking, hard and soft landscaping, amendments to previously -approved estate road and ancillary infrastructural works on a 0.76 hectare site at the eastern side of IDA Drogheda Business & Technology park".*

The decision was subject to appeal; however, the appeal was found to be invalid by An Bord Pleanála.

Meath County Council Reg. Ref. SA/ 40383

On the 7th of January 2005, a final grant of permission was issued by the Planning Authority for development comprising *"the construction of a 2203sq.m two storey office building with third storey plantroom, 10.120m in overall height, with associated access roads, car parking, hard and soft landscaping, amendments to previously approved estate road and ancillary*

infrastructural works on a 0.72 hectare site to the northern side and adjacent the eastern access road roundabout".

Meath County Council Reg. Ref.: SA/50286 – Office Building Adjacent to the Subject Site

On the 7th of November 2005, a final grant of permission was issued by the Planning Authority for development consisting of "*erection of two no. 2164 sq.m, two storey office buildings with third storey plantroom, known as Units D2 and D3, 10.120m in overall height, with associated access roads, car parking, hard and soft landscaping and amendments to the previously approved site for office building, Unit D7 (formerly known as Unit 12D), Reg. Ref.SA/40383 to consist of revised site area, boundaries and car parking layout, associated hard and soft landscaping works, ancillary works and a new east west estate road on an overall site 1.9 hectares*".

Meath County Council Reg. Ref. SA/50502 – Car Park Adjacent to the Subject Site

On the 27th of March 2006, a final grant of permission was issued by the Planning Authority in respect of development comprising "*an additional carpark adjacent to the site of office building, Unit D7 and consequent amendments to the previously approved site for Unit D7 (Reg. Ref. SA/40383 and SA/50286) which will consist of revised site area, boundaries and carparking layout, associated hard and soft landscaping works and ancillary woks on an overall site of 1.29 hectares*".

Meath County Council Reg. Ref: SA/60236

On the 21st of August 2006, a final grant of permission was issued in respect of development comprising "*5056sqm four storey office building with roof plantroom and associated access road, car parking, hard and soft landscaping and retention of a 21.63sq.m. single storey security hut and associated landscaping and site works on a 1.27 hectare site."*

Additional planning approvals for the surrounding area are presented in Appendix 3.1.

3.7 PLANNING CONCLUSIONS

The Proposed Development will be in keeping with all of the aspects of the relevant policy documents as described in Section 3.2 and 3.3 above. The Proposed Development will be situated on suitably zoned lands in the Drogheda area.

The policies and objectives of MCC regarding the conservation, protection and enhancement of environmental resources and assets of the region will not be contravened by this Proposed Development, as will be described in the relevant chapters in this EIA Report.

In conclusion, it can be stated that the Proposed Development complies fully with the stated requirements of MCC and will deliver a key piece of supporting infrastructure.

APPENDIX 3.1

MEATH COUNTY COUNCIL PLANNING SEARCH

PREPARED BY AWN CONSULTING LTD.

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
FS16098 Costa Coffee, C/o Mr Sekar Natarajan,	Works to include the installation of new mezzanine floor, the installation of new emergency & general lighting, alterations to existing fire alarm, laying of floor finishes, erection of internal stud wall partitions, installation of prefabricated prefabricated feature joinery items such as balustrades, coffee counter etc, internal decoration & installation of fixed & loose furniture and the refurbishment of the existing WC	Costa Coffee Drogheda Retail Park Donore Road Drogheda, Co Meath	GRANT PERMISSION 17/10/2016
FS19155 Glenveagh Homes Ltd	Construction of new pre-school (Creche) within the Proposed Development at Rathmullen Road, Drogheda, Co Meath	Rathmullen Road, Drogheda, Co Meath	GRANT PERMISSION 03/10/2019
LB170240 MBCC Foods T/A Costa Coffee	The installation of a new mezzanine floor with an area of 54m^2 at 2.9 metres from ground floor level and a new emergency escape door on the north elevation.	Costa Coffee Unit, Drogheda Retail Park, Donore Road, Drogheda, County Meath	GRANT PERMISSION 25/07/2017
LB170675 Gallow Ash Limited	Demolition of an existing agricultural shed and the construction of 156 no. dwellinghouses, creche and all associated ancillary development works including access, parking, footpaths, lighting, foul and surface/storm water drainage, landscaping and amenity areas.	Rathmullan Road Drogheda Co. Meath	GRANT PERMISSION 15/06/2018
LB181492 Investment Opportunities ICAV	The construction of an extension to this retail warehouse unit comprising a stock room and an outdoor display area, internal modifications and fit-out, associated elevational changes including new fire exits, signage and all associated site works neccessary to facilitate the development	Unit 1A, Drogheda Retail Park Donore Road Drogheda, Co. Meath	GRANT PERMISSION 13/02/2019

SH305552 PL17.305552 Trailford Ltd	(i) demolition of existing farm buildings/structures (1160sqm) on site; (ii) construction of 661 no. residential dwellings and a neighbourhood centre adjacent to the site's eastern boundary, consisting of a childcare facility (486sqm), café (63sqm) and retail unit (318sqm); (iii) a 4-arm signalised junction and works to Rathmullan Road, including the widening of the existing carriageway to 6 metres and the provision of a 2 metre wide footpath linking the Proposed Development to the River Boyne Boardwalk; (iv) 2 no. priority junctions (one along the site's eastern boundary to provide access to the neighbourhood centre and one along the site's southern boundary to provide a second access to the development), realignment and upgrade works to the un-named local road along the site frontage to the south of the new signalised junction with Rathmullan Road; (v) Construction of a strategic foul water pumping station in the north-eastern corner of the site; and (vi) all associated site, landscaping and infrastructural works, including foul and surface water drainage, attenuation areas, open space areas, boundary walls and fences, internal roads and cycle paths and footpaths. The 661 no. residential dwellings consist of the following: • 509 no. double storey semi-detached and terraced houses comprising 158 no. 2-bed houses, 269 no. 3-bed houses and 82 no. 4-bed houses; and • 152 no. apartments (in Blocks B1, B2, B3, C, D, E & G which vary from 3 to 5 storeys in height) comprising 13 no. 1-bed apartments and 139 no. 2-bed apartments. A total of 1,366 no. car parking spaces are proposed, including 1018 no. spaces (2 no. on curtilage spaces per dwelling) serving the proposed dwellings, 195 no. spaces serving the proposed apartments; 111 no. spaces serving visitors to the development; and 42 no. spaces serving the proposed neighbourhood centre. A total of 188 no. bicycle parking spaces are proposed, including 154 no. spaces serving the proposed apartments and 34 no. spaces serving the proposed neighbourhood centre. The development also features 9.15 hectares of public open space, including landscaped play spaces and pocket parks throughout the development and 6.13 hectares of landscaped open space provided adjacent to the Boyne River and M1 motorway frontages. This application is accompanied by an Environmental	Rathmullan Road Rathmullan Drogheda, Co. Meath	GRANT PERMISSION 29/01/2020

	Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS).		

FS17170 Melanie Bell	75.9 m2 side extension consisting of a single open plan classroom	Scribbles & Giggles Pre-School Day Centre Knightswood, Matthews Lane Platin Road, Lagavoreen Drogheda, Co Meath	GRANT PERMISSION 13/03/2018
LB141095 Tony Cromwell	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/901402 - demolition of the existing dwelling and associated out buildings, provision of new site access from Lagavooren Manor, construction of 7 new dwelling houses including drainage connection, car parking and all associated sit works	Beamore Road, Lagavooren, Drogheda, Co. Meath	GRANT PERMISSION 06/02/2015
LB141166 Rockview Development Ltd	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/900997 - Revisions to previously approved mixed use development Reg Ref SA60309. The development will consist of a 2 & 3 storey mixed use development comprising 2996sqm leisure centre, 1694.5sqm of retail space including an off lience, 389sqm medical centre, 707sqm creche with 120sqm outdoor play area, underground car park with 90 spaces, surface car park with 122 spaces, internal ancillary areas including circulation, plant rooms along with all external ancillary site development works including landscaing & boundary treatments & the omission of 4 no. previously approved type F housing blocks comprising 6 no. ground floor residential units & 6 no.. first/second floor duplex residential units	Avourwen Village & The Medows Plattin Road Duleek, Drogheda, Co. Meath	GRANT PERMISSION 24/02/2015
LB141185 Joe Murphy Developments	Change of house type from 14 No. two storey town houses types A B & C permitted as units 1-14 in planning permission SA/70537 extended under permission SA/121086 to 2 No. two storey three bedroom detached house type H and 10 No. two storey three bedroom semi detached houses type J and associated site works	Knightswood, Matthew Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 25/03/2015

SA120901 DDF Partnership	change of use of the previously permitted motor sales outlet (1680sqm) to medical clinic use at ground and first floor levels including ancillary staff, patient and administration areas. The development will also consist of minor elevational amendments including the provision of new glazing and cladding to existing opes and a new canopy to existing pedestrian door on the south east elevation and a new canopy to existing pedestrian door on the south west elevation and provision of 4 no. additional parking spaces adjacent to the east and south of the building. (The development will be served by permitted existing surface car parking provision.)	Unit 10 Drogheda Retail Park, Donore Road, Rathmullen, Co Meath	GRANT PERMISSION 11/02/2012
LB171481 Fergus & Shane Neilon	EXTENSION OF DURATION OF PLANNING PERMISSION No SA/120081 - Two no. additional four bedroom, two storey semi-detached dwellinghouses (Circa 112m2 each) with associated siteworks, drainage and parking measures	No. 31, The Lawns, Highlands, Rathmullen Road, Drogheda, Co. Meath	GRANT PERMISSION 20/12/2017
LB190093 Ravala Ltd	alterations to dwellings on site numbers 138-142 (5no. dwellings) as granted under planning under planning ref: LB160450 to now include 7no. 2-bedroom Disability/Retirement bungalows, with all associated landscaping, site development and civil works. This equates to 2 additional dwellings	Knightswood, Matthews Lane, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 01/02/2019
SA121086 Martin Dunne (per Martin Ferris Receiver)	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/70537 - 172 unit residential development.	Mathews Lane, Platin Road, Lagavoureen, Drogheda Co Meath	GRANT PERMISSION 20/12/2012

LB151408 J Murphy Developments Ltd	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no. type H (2 storey 3 bed semi detached town houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015
LB170414 Scribbles & Giggles Creche	the development will consist of a single storey one classroom side extension and all associated site works	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 19/04/2017

LB171546 J Murphy Developments Ltd	EXTENSION OF DURATION OF PLANNING PERMISSION LB160450 - Development will consist of change from 94no. mixed house types and duplex apartments on site numbers (79-172) as granted under planning ref: SA60423, SA70537 & SA121086 to 30no. Type H (3-bed semi-detached), 3no. Type G (3-bed detached), 18no. Type J (3-bed end of terrace) & 12no. Type K (2-bed mid terrace) all on site number 86-148. This represents a decrease of 24 units. The development will also consist of change of house Type G (3-bed detached) on site number 55 as granted under planning ref: LB151408 to 2no. Type H (3-bed semi-detached) with all associated site & civil works. This represents an increase of 1 unit.	Knightswood, Matthews Lane, Drogheda, Co. Meath	GRANT PERMISSION 29/12/2017
LB160450 J Murphy Development Limited	development will consist of change from 94no. mixed house types and duplex apartments on site numbers (79-172) as granted under planning ref: SA60423, SA70537 & SA121086 to 30no. Type H (3-bed semi-detached), 3no. Type G (3-bed detached), 18no. Type J (3-bed end of terrace) & 12no. Type K (2-bed mid terrace) all on site number 86-148. This represents a decrease of 24 units. The development will also consist of change of house Type G (3-bed detached) on site number 55 as granted under planning ref: LB151408 to 2no. Type H (3-bed semi-detached) with all associated site & civil works. This represents an increase of 1 unit. Significant further information/revised plans submitted on this application	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 10/05/2016
LB190254 Ruth & Andy Kiernan	*demolition of an existing utility room to side of the existing dwelling, * removal and replacement of roofs to existing dwelling, * construction of 2 no. new single storey extensions to the rear of the existing dwelling, including a 2 bedroom assisted-living family flat, * construction of a first floor extension over existing single storey section of dwelling, * construction of a new detached garage to the side of the existing dwelling, * alterations and improvements to the existing site entrance, * decommissioning of existing septic tank & provision of new proprietary wastewater treatment system & percolation area * and all associated site works. Significant further information/revised plans submitted on this application	Donore Road, Drogheda, Co. Meath	CONDITIONAL GRANT PERMISSION 12/07/2019

LB141038 Harvest Distilling & Brewing Ltd.,	change of use of former car showroom and maintenance workshop to new distillery, brewery and visitors centre, with associated new buildings including warehouse and site development works. The development shall consist of new distillery, brewery together with canning and bottling lines, whiskey filling area, barrell storage, associated offices, laboratory, restaurant, retail area, tasting rooms, kitchen, including preparation and servery area, associated stores and offices all within existing buildings. Permission sought for visitors centre incorporating new entrance foyer with function room at first floor level, roof garden at second floor level, new service building with plant rooms and amenity facilities, external tanks and silos, new warehouse with offices over three floors, machinery building, site development works, including car-parking, disabled car parking, car parking for electrical re-charging of eco cars, bus parking, cycle parking, new vehicular service entrance, storm water attenuation and harvesting systems, foul sewer pumping station with rising main to existing manhole located at entrance to Knights Wood residential development, at access off Matthews Lane	Bryanstown,, Duleek, Co. Meath	GRANT PERMISSION 20/11/2014
LB160011 Harvest Distilling & Brewing Ltd.	land permission for retention of developments. The development consists of A. Change in layout of whiskey storage area granted planning permission under planning reference LB141038, to incorporate new keg filling area, cider process area including external tank, mezzanine area and covering of existing ramp to basement. B. New fire water storage tank with pump house and associated site development works. C. Retention permission of ESB sub-station, with adjoining switch room and pump house	Bryanstown, Platin Road, Drogheda, Co. Meath	GRANT PERMISSION 12/01/2016
LB141022 Laurence Cassidy	the development will consist of the following, the change of use of existing house from commercial 6 bedroom non residential bed and breakfast to residential dwelling house	Platin Lower, Duleek, Drogheda, Co. Meath	GRANT PERMISSION 14/11/2014

SA120881 Danielius Stankevicius	1. retention and completion of a new 3 bedroom storey-and-half replacement dwelling, 2. retention and completion of existing garage, 3. proposed relocation and improvement of existing vehicular entrance, 4. proposed proprietary waste water treatment system and percolation area, 5. all associated site works	Drogheda Road, Donore, Co Meath	GRANT PERMISSION 08/10/2012
SA100051 James Gogarty	alterations to front, side & rear elevations of existing building, (2) a two storey extension to front elevation, (3) a single storey extension to the side & rear elevations, (4)the construction of a new side entrance attached to the west side of the dwelling, (5) the construction of a small green house located to the rear of the site & (6) all associated site development works connected with the development	Dunamaise House, Donore Road, Donore, Drogheda Co Meath	GRANT PERMISSION 27/01/2010
SA110353 Drogheda Town Football Club	2 No. Football pitches, carparking, 2 No. Temporary storage containers and all associated site works.	Platin Road, Lagavoreen, Co. Meath	GRANT PERMISSION 18/04/2011
SA110622 Mark & Tanya Curry	a proposed two storey extension to the side, including a single storey extension to the rear of the existing dwelling house and all associated site works	No. 6 The Crescent, Highlands, Rathmullan, Drogheda, Co Meath	GRANT PERMISSION 27/06/2011
LB180873 Michael & Lynn McGovern	retention of existing single storey extension to rear and side of existing two-storey dwelling and proposed first floor extension to side of existing two-storey dwelling	No. 13, The Court, Highlands, Rathmullan, Drogheda, Co. Meath	GRANT PERMISSION 07/08/2018
LB140854 Lyndsey McHugh and Rodney Everitt	the development will consist of new two storey extension to side and rear of existing dwelling and new single storey sunroom extension to rear of existing dwelling along with all associated site works	17 The Green, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 26/09/2014

LB160950 Donal & Tara Murphy	development will consist of the construction of a new first floor extension over existing single storey part to side of dwelling and a new single storey extension to rear of existing dwelling, together with all associated site works	16 The Avenue, Highlands,Drogheda, Co. Meath	GRANT PERMISSION 31/08/2016
LB140854 Lyndsey McHugh and Rodney Everitt	the development will consist of new two storey extension to side and rear of existing dwelling and new single storey sunroom extension to rear of existing dwelling along with all associated site works	17 The Green, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 26/09/2014
LB190177 Ian & Mary Barrett	the construction of a new single-storey extension to the side and rear of existing dwelling, together with all associated site works	3 The Lawn, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 21/02/2019
LB160950 Donal & Tara Murphy	development will consist of the construction of a new first floor extension over existing single storey part to side of dwelling and a new single storey extension to rear of existing dwelling, together with all associated site works	16 The Avenue, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 31/08/2016
LB181033 Joseph & Denise Connor	proposed two storey/single storey rear extension to existing two story dwelling and all associated works	25 The Drive, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 07/09/2018
SA140457 Robert Byrne	first floor side extension to existing dwelling and all associated site works	53 The Drive, Highlands, Rathmullen Road, Drogheda, Co. Meath	GRANT PERMISSION 29/05/2014
LB171168 Barry Whelan	the development will consist of the following: (a) construction of a first floor extension over single storey part to side of existing dwelling (b) construction of a single storey extension to rear of existing dwelling (c) construction of a bay window to front of existing dwelling (d) all associated site works	50 The Drive, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 06/10/2017

SA110864 Kevin O'Brien	1. Permission to construct a single storey extension to rear of dwelling with all ancillary site works and 2. Permission for retention of domestic store/garage, upgraded Puraflo wastewater treatment system with polishing filter, revised site layout and alteration to single storey extension to side of dwelling from plans previously submitted under SA/70395	Newtown, Platin , Drogheda, Co Meath	GRANT PERMISSION 15/09/2011
LB150245 Siobhan & John Conway	development consists of modifications and alterations to the existing dwelling and a new single storey extension to the side and rear, including upgrading the existing septic tank to a new wastewater treatment system and percolation area and all associated site works.	Newtown Platin, Donore, Co. Meath	GRANT PERMISSION 12/03/2015
SA100452 Deirdre Bidwell	construction of a single story extension to the south facing elevation of the existing dwelling, comprising of a sunroom and all associated site works.	Newtown Platin, Donore Co Meath	GRANT PERMISSION 06/05/2010
LB151408 J Murphy Developments Ltd	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no. type H (2 storey 3 bed semi detached town houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015
	alterations to dwellings on site numbers	Knightswood,	GRANT

LB190093 Ravala Ltd	138-142 (5no. dwellings) as granted under planning under planning ref: LB160450 to now include 7no. 2-bedroom Disability/Retirement bungalows, with all associated landscaping, site development and civil works. This equates to 2 additional dwellings	Matthews Lane, Lagavoreen, Drogheda, Co. Meath	PERMISSION 01/02/2019
LB141185 Joe Murphy Developments	change of house type from 14 No. two storey town houses types A B & C permitted as units 1-14 in planning permission SA/70537 extended under permission SA/121086 to 2 No. two storey three bedroom detached house type H and 10 No. two storey three bedroom semi detached houses type J and associated site works	Knightswood, Matthew Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 31/12/2014
FS20011 Drogheda Grammar School, BOM	construction of a new split level classroom building to the North-West of the existing school comprising of 4 no. classrooms, toilets, office and all associated site works	Drogheda Grammar School, Mornington Road, Drogheda, Co Meath	DECISION DUE 02/11/2020
LB181396 Drogheda Grammar School	development which is in the curtilage of a protected structure - Eden View House, ref MH021-100. The development will consist of the following: 1. Construction of a two-storey extension to north of existing school teaching block, consisting of 2 no. classrooms, new social space, library and assembly area along with internal alterations, 2. All associated site work	Marsh Road, Stameen, Drogheda, Co Meath	CONDITIONAL GRANT PERMISSION 23/01/2019

SH303799 Coreet Ltd.	A Strategic Housing Development at Bryanstown, Drogheda, Co. Meath. The construction of 250 no. dwelling units comprising 94 no. houses (comprising 12 no. 2 storey, 2-bedroom terraced houses; 68 no. 2 storey, 3-bedroom terraced houses and 14 no. 2 storey, 3-storey semi-detached houses); and 156 no. duplex/apartments within 8 no. 3 storey blocks (comprising 138 no. 2 bedroom apartments; 10 no. 3 bedroom apartments; and 8 no. 2 bedroom first/second floor duplex units). The proposed development will also provide for 1 no. 2 storey childcare facility with associated open space; public open space (within 3 no. areas); 363 no. car parking spaces and 140 no. bicycle parking spaces; bin storage areas; 2 no. ESB substations/kiosks; and all associated ancillary site development and infrastructure works including foul and surface water drainage, internal roads, public lighting, cycle paths and footpaths, boundary treatments and landscape works, potential for undergrounding and works to existing overhead ESB powerlines. A temporary foul water pumping station is also proposed as part of the development. Vehicular access to the proposed development is to be from Beamore Road to the west with pedestrian and cycle access from Beamore Road to the west and from Beamore Road to the north.	Bryanstown, Drogheda, Co. Meath	CONDITIONAL GRANT PERMISSION 22/11/2019
LB191536 Glenveagh Homes Ltd	the applicant has commenced construction of Planning Reference LB/170675 on site. The proposed comprises of the replacement of 16 no. previously permitted detached two storey (4 bed) dwellings with 28 no. two storey semi-detached and terraced dwellings; comprising 24 no. x 3 bed and 4 no. 4 bed (an overall increase of 12 dwellings). The number of overall dwellings are proposed to increase from 156 no. dwellings permitted to a total of 168 no. dwellings proposed. All associated site development works including relocation of permitted pumping station 50 metres to the east. A Natura Impact Statement has been prepared in respect of this Planning Application	Oldbridge Manor, Rathmullan Road, Drogheda, Co. Meath	CONDITIONAL GRANT PERMISSION 21/01/2019
LB200403 Manley	The construction of 5 no House Type A, 4- bedroom 2-storey detached houses, 12no House Type A1, 4-bedroom 2-	Avourwen, Platin, Duleek Road, Lagavooren,	DECISION

Developments Limited	storey semi-detached houses, 2no House Type A2, 4-bedroom 2-storey detached houses, 54no. House Type B, 3-bedroom 2-storey semi-detached houses, together with landscaping and services works and all associated siteworks at The Laurels, The Pines, The Oaks, Avourwen. Previously, planning permission was granted for similar houses on the same site layout by way of Planning Register Number. SA/60309, subsequently extended by permission Planning Register Number SA/120088.	Drogheda, Meath	DUE 22/09/2020

APPENDIX 3.2

LOUTH COUNTY COUNCIL PLANNING SEARCH

PREPARED BY AWN CONSULTING LTD.

Louth County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
13510015 Seamus Domegan	Extension of Duration of Planning Permission 08/170 which consists of Permission for four-storey office building with rooftop plant room (total floor area 4531sq.m.) accommodating 8 no. office units ranging in size from 200sq.m to 696sq.m. Development includes 88 no. surface car parking spaces, bicycle parking, a 22.8sq.m. ESB substation, refuse store, landscaping, boundary treatment, services, illuminated building signage & ancillary site works. Development also includes a 7.0m high by 2.2m wide free-standing double sided monolith advertising sign with up-light illumination.	Matthews Lane, Donore Industrial Estate Road, Drogheda, County Louth	GRANT PERMISSION 27/02/2013
11510022 Lorraine Prendergast	Single storey pitched roof extension to side comprising a Kitchen & Shower Room, also an Attic Study with Rooflights.	11 Knockbrack Close, Drogheda, Co. Louth.	GRANT PERMISSION 21/03/2011
14510014 Keith Smyth	Permission for construction of 2 storey extension to side of existing dwelling house over existing ground floor, new bay window and porch along with all associated site works	26 Knockbrack Close, Matthews Lane, Drogheda, County Louth	GRANT PERMISSION 18/02/2014
17918 McBreen Environmental	Permission to erect a fully serviced two storey office building with attached workshop / maintenance building, form hardstanding yard for vehicle parking, truck wash facilities for private use, erect perimeter fencing, install pumping station, connection to existing services and all ancillary and associated works.	East Coast Business Park, Matthews Lane, Donore Road, Drogheda	GRANT PERMISSION 11/12/2017
10510103 Co. Louth V.E.C.	Extension & alterations to existing school buildings to include 6 no. CLASSROOMS together with ancillary accommodation, along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda.	GRANT PERMISSION 01/10/2010
10510034 County Louth V.E.C.	Six no. temporary CLASSROOMS along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda	GRANT PERMISSION 30/03/2010
14510021 Board of Management St Oliver's Community College	Permission for a single storied extension and alterations to the existing school buiding in two separate locations to include a new entrance, 10 no. classrooms and offices together with ancillary accommodation and associated site works	St Oliver's Community College, Rathmullan Road, Drogheda, County Louth	GRANT PERMISSION 07/03/2014
15675 Louth & Meath Education & Training Board (LMETB)	Permission for Proposed Development will consist of a new two-storey administrative headquarters building. The building will be exclusively occupied by the applicant (LMETB) for the purposes of administering educational & training services in the Louth & Meath areas. The Proposed Development also provides for 57 no surface car parking spaces, cycle parking, landscaping and boundary treatment, signage and all associated site development works. Vehicular access to the Proposed Development is provided via a new access off Marley's Lane.	Marley's Lane / Rathmullen Road, Drogheda, County Louth	GRANT PERMISSION 12/10/2015

10510103 Co. Louth V.E.C.	Extension & alterations to existing school buildings to include 6 no. CLASSROOMS together with ancillary accommodation, along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda.	GRANT PERMISSION 01/10/2010
14574 Respond Housing Association	Permission for a single storey extension to the existing bungalow and site development works to provide for a new private disabled carparking space, which includes new vehicular access, boundary modifications and relocation of 3 existing carparking spaces to existing public green.	77 Tredagh View, Marleys Lane, Drogheda, Co Louth	GRANT PERMISSION 12/12/2014
19237 Ian Farrell & Nicola Farrelly	Permission to construct a single storey 24m2 extension to the east of the dwelling, to demolish a section of the existing dining room wall and to create a 1550mm opening into the proposed 20m2 family room with a 4m2 WC and utility room.	37 Marley Court, Drogheda, Co Louth	GRANT PERMISSION 29/03/2019
18292 Gary & Eavan Doyle	Permission requested for new two-storey extension to eastern side of existing two-storey dwelling house along with associated internal alterations and siteworks.	21 Cedarfield, Drogheda, Co. Louth	GRANT PERMISSION 20/04/2018
13510066 Berchmans Enterprises Limited	Permission for: (i) Timber shopfront to existing pub entrance to the south elevation (ii) covered enclosure to existing smoking area with slate covered projecting canopy structure including projecting canvas awnings and free standing wind breakers all to south west elevation (iii) Retention permission is sought for halo illuminated signage to the south west elevation, and associated site works. The Proposed Development is within the curtilage of a Protected Structure ***Grant Permission for (i) Timber shopfront to existing pub entrance to the south elevation (ii) covered enclosure to existing smoking area with slate covered projecting canopy structure including projecting canvas awnings and free standing wind breakers all to south west elevation subject to 4 conditions in Schedule 1*** To Grant Permission for (iii) Retention permission is sought for halo illuminated signage to the south west elevation, and associated site works subject to the 2 conditions in Schedule 2**	The Thatch Public House, Donore Road, Drogheda, Co Louth	GRANT PERMISSION 20/09/2013
18786 Maxol Ltd	Permission is sought for the following: (i) A 182 sq.m. extension to the existing shop, deli and off licence, and the creation of a modernised shop, wine off license, deli and seating area, (ii) Extension of existing forecourt to provide designated parking, (iii) Minor realignment of existing access points, (iv) Ninetenn car parking spaces and new cycle parking stands, (v) Relocation of offset fill point and vent pipes, (v) Relocation of existing car wash, (vi) New corporate signage. The Proposed Development also includes all site develoment works including drainage and landscaping.	Maxol Service Station, Donore Road, Drogheda, Co Louth, A92HX9A	GRANT PERMISSION 28/09/2018

19724 Maxol Limited	Retention & Permission for development on a site of approximately 0.3549 hectares, which currently accommodates a Maxol Service Station, and unit 9 (a garden centre). The Proposed Development will consist of the demolition of Unit 9 (a two storey building, 462sqm) and removal of associated structures and the removal of part of the existing service station forecourt canopy; and the construction of single storey extension (275sqm) onto the existing single storey forecourt building (155sqm), resulting in a forecourt building of 430sqm. The resultant forecourt building will accommodate a 100 sqm shop (including a 9 sqm ancillary off-licence; 3 no. restaurant/café areas (which will include for the sale of hot and cold food for consumption on and off the premises) (one of which will include a drive-thru facility); associated restaurant/café seating areas; ancillary kitchens, staff and customer facilities, plant, storage, back of house and circulation spaces. The development will also consist of elevational changes to the existing building; signage (replacement of a 6.5m high double sided internally illuminated totem sign, new shopfront signage, some internally illuminated, and signage associated with the car wash); external lighting; revisions to the site layout (the provision of 43 no. car parking spaces, bicycle parking spaces, waste and plant storage area; new replacement car wash, vent pipes, offset fill point and air/water services point); changes to levels; hard and soft landscaping, including revised boundary treatments and an external public seating area; associated site servicing (water supply, foul and surface water drainage including surface water attenuation measures); all other associated site development works above and below ground; realignment of the existing vehicular access points at Donore Road; and closure of the existing vehicular access to the garden centre site. Retention permission is sought for development consisting of a parcel collection kiosk.	Maxol Service Station, Donore Road, Drogheda, Co Louth	GRANT PERMISSION 06/09/2019
18674 Energy Efficient Homes Ltd.	The development will consist of the following: 1. Retention of change of use of unit 2. Retention of the subdivision of existing commercial unit along with internal alterations 3. Retention of alterations to existing east elevation which include 2no. doors and 1no. window 4. Retention of existing signage 5. Proposed alterations to existing elevations which include 1no. new door on the east elevation, and 1no. window to be removed and 5no. new windows to the west elevation.	Unit 1 A, Block 2, Drogheda Industrial Park, Donore Road, Drogheda Co Louth	GRANT PERMISSION 24/08/2018
17672 Mardam Ltd	Permission for the development that consists of the retention of offices at ground and first floor level, and retention of a mezzanine floor and the Proposed Development will consist of completion of the retention works, a personnel door in the rear façade of the building, internal alterations and for associated site works.	Unit 1b, Block 2, Drogheda Industrial Estate, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 11/09/2017

18320 Joe Duffy Property Company Limited	Permission for an extension at (Former Tom Fox) car showroom site. The development consists of extensions to the south and east elevations to form additional workshop area and car valeting/wash facilites, (combined addition of 243.7m2 floor area), with associated internal reconfiguration. External customer parking layout and used display areas to be reconfigured. Elevations to receive new external cladding, and corporate signage consisting; 1 brand pylon, 1 directional pylon and 4 fascia signs.	Former Tom Fox Car Showroom site, New Grange Business Park, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 27/04/2018
16922 Renata Jakutiene	Retention Permission for development consisting of change of use of existing mixed retail and onsite learning activity and development centre use from previously granted retail werehousing granted under register reference 04197. Retention is also sought for existing signage located on external wall of building.	Unit 2a, Drogheda Industrial Park, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 20/12/2016
15615 Gary Kelly	Retention Planning Permission for retention of the first floor constructed in the existing unit and for permission for a change of use from light industrial/retail use to a fitness centre at ground level.	Unit 11B, Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 17/09/2015
16239 Ian Madden	Retention permission for a change of use from a manufacturing/retail use to a taxi/cab operational facility also retention permission for the palisade fence along the south eastern boundary of the complex.	Unit 11A Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 15/04/2016
13510049 Pharaway Properties Limited	Permission for development will consist of the change of use of c.37m² of the existing bulk storage area to Class 1 retail sales area (non-food) & all associated site development works & site services with the Tesco Supermarket.	Matthews Lane, Rathmullan, Drogheda, County Louth	GRANT PERMISSION 11/07/2013
10510088 Blackstone Motors Ltd.	Change of use of part of ground floor from industrial/warehouse/wholesale retail to Motor Vehicle Sales & will also include alterations to existing building facade, an extension of 194 sq.m. to west side of existing building, the erection of Advertising Flags, Totem Signs, Facade Mounted Signage, new paladin boundary fence along southern boundary & all ancillary site dev. works & services.	Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 27/08/2010
17719 Nature's Best Ltd	Permission to construct a single storey factory extension of 2,682 square meters to provide loading bay, cold storage, packaging room, production area, plant room and all associated site works.	Greenvale Park, Rathmullen , Matthews Lane, Drogheda, Co. Louth. A92FT59	GRANT PERMISSION 25/09/2017
17377 Lidl Ireland GmbH	Retention permission and completion of ongoing development consisting of amendments to planning permission reference 15/716 (relating to the construction of a new licenced discount foodstore). The Proposed Development comprises 1)The extension of site area to 1.18 hectares; 2) reconfirguration and extension of permitted car park to provide 181 no. parking spaces; 3) relocation of permitted pedestrian entrance on Donore Road; 4) Installation of plant/equipment to roof of delivery / loading bay; and 5) associated and ancillary revisions to permitted hard and soft landscaping and boudaries and boundary treatments, and all other associated and ancillary modifications to 15/716 above and below ground level.	Donore Road , Drogheda, Co Louth	CONDITIONAL GRANTED PERMISSION 12/07/2017

10510110 Lidl Ireland Gmbh	Single storey extension with a flat roof & located to the front of the existing store & will be finished with materials consistent with the existing store. The proposed dev. also comprises an enclosed plant area adjoining the proposed extension, internal modifications/connections to the existing store & all assoc. works. Relocate existing car parking spaces, connection to existing services on site with all ancillary site dev. works.	Donore Road, Drogheda	CONDITIONAL GRANTED PERMISSION 23/02/2011
11510042 DDF PARTNERSHIP	Extension of duration on planning file 04/324 - demolition of factory buildings & construction of 6 no. Retail warehouse units	Former tellabs site, donore road, drogheda	CONDITIONAL GRANTED PERMISSION 01/07/2011
19504 Gatevale Ltd. T/A John McCabe Nissan Drogheda	Permission for a new car showroom with attached ancillary vehicle maintenance unit, building signage, surface car parking area with lighting, totem signage poles, new boundary fence/walls, use of existing vehicle entrance onto Donore Industrial Estate road and all associated site/civil development works.	Donore Industrial Estate, Donore Road, Lagavoreen, Drogheda, Co Louth	CONDITIONAL GRANTED PERMISSION 02/10/2019
16508 Irish Breeze Limited	Permission for the following: 1. to erect 2no. (8.1m x 1.7m) external LED backlit signs to south and east facades of the building, 2. erection of a two storey 258m2 extension to the south facade of the building for water tank storage purposes and an engineer's workshop, and including all associated site development works required for the above works.	Matthew's Lane South, Donore Road Industrial Estate, Drogheda, Co. Louth	CONDITIONAL GRANTED PERMISSION 24/10/2016
16507 Irish Breeze Limited	Retention permission for the following: 1. Upgrade of site boundary fencing to the east and south to 2.4m high to matching existing, 2. the installation of 2 no. 2.4m high sliding gates to front (east) and rear (south) entrances. 3. the construction of 1no. single storey external 73m2 structure, adjacent to the northern site boundary for storage of pallets only, 4. 1no. 129m2 concrete pad with associated retaining walls and water tanks, adjacent to southern boundary, 5. for a second loading dock to the east of the existing loading dock on the north facade, 6. a 40m2 fenced compound with concrete pad, for a chiller unit as part of an air conditioning system to the south east corner of the building, adjacent to the southern boundary & 7. two no. 1600mm x 400mm external signs, positioned either side of entrance on existing wing walls, and including all associated site development works.	Matthew's Lane South, Donore Road Industrial Estate, Drogheda, Co. Louth	CONDITIONAL GRANTED PERMISSION 20/01/2016
LB170052 Ravala Ltd	the retention and completion permission consists of change of house type on site no. 55 from a 3-bed detached dwelling as granted under under ref: LB151408 to 2 no. 3-Bed semi detached dwellings, also change of house type on site nos. 68, 70, 71 from a three house terrace as granted under permission ref: LB151408 to 2 no. 3-bedroom semi detached dwellings with all associated site works	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 24/01/2017
SA121086 Martin Dunne (per Martin Ferris Receiver)	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/70537 - 172 unit residential development	Mathews Lane, Platin Road, Lagavoureen, Drogheda Co Meath	GRANT PERMISSION 20/12/2012

LB151408 J Murphy Developments Ltd	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no. type H (2 storey 3 bed semi detached town houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015
14592 Eircom Ltd	Permission for site separation works to include a new entrance, site security fencing & ancillary works including new connections to public sewers & watermains	Eircom Area Engineering Headquarters, Donore Road Industrial Estate, Donore Road, Drogheda County Louth	GRANT PERMISSION 22/12/2014
10510080 Irish Flavours & Fragrances Ltd.,	Decommissioning & removal off site of production elements to I.F.F. factory premises (factory bld & assoc.facilities to remain) including- EXTERNALLY:- covered bulk storage tanks, covered bicycle storage shed, gas cylinder storage cages, barrel roller tracks & racking, empty barrel storage compound, compactor, external metal stairways ancillary to bulk storage tanks, backup generator, fuel storage tank, plus related services & equipment. INTERNALLY:- including- covered bulk storage tanks, production machinery, ancillary pipework & valves to tanks & machinery, internal partitions, 1st flr mezzanines & support systems & attached services, barrel roller tracks & racking system, all equipment & related services ancillary to production machinery,all production related electrical circuits & related equipment,relevant air handling units & assoc.equipment & services,laboratory fixtures,fittings & related services,all kitchen fixtures,equipment & related services.	Donore Industrial Estate, Drogheda, Co. Louth.	GRANT PERMISSION 20/08/2010
18854 Advanced Environmental Solutions (Ireland) Ltd	Permission consisting of (a) retention of (1) an existing end of life tyre storage bay comprising temporary 3.10m high removable pre-cast concrete proprietary retaining block wall, (2) an existing equi-wall storage bay comprising temporary 4m high removable block wall and (b) permission for tyre shred storage bay comprising 6m high mass concrete walls which will replace an existing temporary bay formed by removable pre-cast concrete proprietary block walls at the facility.	Donore Road, Drogheda, County Louth	GRANT PERMISSION 23/10/2018

16645 Combesgate Ireland Ltd	Permission for development will consist of construction of external tyre storage bays and all associated site development works.	Combesgate Ireland Ltd, Donore Road Industrial Estate, Drogheda, Co. Louth	GRANT PERMISSION 15/09/2016
13510009 Pat & Mary Rose Fallon	Extension of Duration of planning permission 07/106 - Permission for Const.of District Centre retail & commercial dev. on site of 5.96ha. Floor area will comprise c.15,970 sq.m gross retail & comm. flr space in 4 main blds, including: Block A-single-storey anchor retail unit (c.7,685sq.m gross retail flr space) (2,776sq.m net convenience retail flr space, includ. off licence & c.2,426sq.m net non-food retail flr space),with ancillary admin. offices, staff facilities, storage, cage marshalling area(includ. freezer & chiller rooms), recycling centre & service yd area; Block B-single-storey café unit (157 sq.m gross flr space) & ancillary waste storage & service yd,with attached bus shelter canopy, adjacent bus stop & bus lay-by; Block C- a 3-4 storey over basement bld (4,306.2sq.m) containing 8 no. gnd. flr. retail / comm. services units (total 1,065 sq.m.net retail flr space), with offices overhead on 1st, 2nd & 3rd flrs; and Block D-a 3-storey over basement bld.(3,821.8sq.m)containing 6.no.retail/comm services units at gnd flr (total 715.7sq.m net retail flr space),along with medical centre reception; Medical Centre at 1st flr level, with offices located at part 1st flr & 2nd flr level. Basement located under Blocks C & D contains parking & ancillary services. Surface car parking for 664 spaces & basement parking for 169 spaces. Dev. carried out on foot of PP Ref 04/95 is modified by the relocation of 13 no. car pkg spaces, incorporated into the above, & by the relocation of the ESB substation. The proposal includes 3 no .free standing internally illuminated totem signs. Dev. provides for construction of new roads infrastructure includ. a new roundabout & relocated access to IFF factory on Donore Rd Sth; new perimeter access rd extend. from Donore Rd Sth thru the dev.site extend.to new rd infrastructure located in Co.Meath, extend. sth from Drogheda Retail Pk(subject to separate application)& roadway extend.sthwards alongside the western boundary of Natures Best factory; includ. boundary walls & railings to private properties. EIS included with appl.	Matthews Lane, Drogheda, County Louth	GRANT PERMISSION 06/02/2013
17410 Paul & Miriam Rice	EXTENSION OF DURATION Ref 12510029 for Permission of side extension to creche facility & all associated site works	Ferndale , Matthews Lane, Drogheda, County Louth	GRANT PERMISSION 31/05/2017
14525 Patrick & Mary Rose Fallon	Permission for development will consist of a multiplex cinema complex comprising 6 to 10 screens, plus ancillary customer & staff facilities & surface car parking**Significant Further Information was lodged 04/02/2015**	Matthews Lane & Matthews Lane South, Rathmullan District Centre, Drogheda, County Louth	GRANT PERMISSION 18/11/2014

13510015 Seamus Domegan	Extension of Duration of Planning Permission 08/170 which consists of Permission for four-storey office building with rooftop plant room (total floor area 4531sq.m.) accommodating 8 no. office units ranging in size from 200sq.m to 696sq.m. Development includes 88 no. surface car parking spaces, bicycle parking, a 22.8sq.m. ESB substation, refuse store, landscaping, boundary treatment, services, illuminated building signage & ancillary site works. Development also includes a 7.0m high by 2.2m wide free-standing double sided monolith advertising sign with up-light illumination.	Matthews Lane, Donore Industrial Estate Road, Drogheda, County Louth	GRANT PERMISSION 27/02/2013
17918 McBreen Environmental	Permission to erect a fully serviced two storey office building with attached workshop / maintenance building, form hardstanding yard for vehicle parking, truck wash facilities for private use, erect perimeter fencing, install pumping station, connection to existing services and all ancillary and associated works.	East Coast Business Park, Matthews Lane, Donore Road, Drogheda	GRANT PERMISSION 11/12/2017
13510051 Drogheda Leisure Facilities Ltd	Permission for development comprising of 35 car parking spaces & all associated site development works including car park lighting on lands to the north of the existing LMFM building & consequent deletion of condition 9 attached to planning permission PA ref no 11/88 An Bord Pleanala ref no PL54.240365 for primary care centre also at Marley's Lane. Access & egress to the car park will be from the existing permitted & established vehicular entrance to the LMFM building	Marley's Lane , Drogheda , County Louth	GRANT PERMISSION 26/07/2013
11510067 Drogheda Leisure Facilities Ltd	The development will consist of change of use from Hairdressing Salon to Fast Food Outlet to include internal alterations at ground floor level and all other associated works	Unit 1 Drogheda Retail Centre, Rathmullen Road, Drogheda, Co Louth	GRANT PERMISSION 19/09/2011
11510064 St Nicholas G.F.C. c/o Dessie McDonnell	1. First Floor Extension to Existing Clubhouse; 2. New Sports Hall & All Associated Siteworks	Jimmy Pentony Park, Rathmullen Road, Drogheda	GRANT PERMISSION 16/09/2011
1798 St Nicholas GFC	Permission to construct 1. first floor extension to existing club house 2. All weather pitch with floodlights and boundary fence and all associated siteworks.	Jimmy Pentony Park, Rathmullan Road , Drogheda , Co Louth	GRANT PERMISSION 15/02/2017
10510123 B.O.M. St John's Junior N.S.	1 no. temporary accommodation building to the east of the school, housing 1 no. CLASSROOM & 4 no. Special Education Tuition ROOMS (total area 160 sq.m.), including foul & surface water connections to existing mains & with paths & ramped access.	St. John's Junior N.S., Rathmullen, Drogheda	GRANT PERMISSION 08/12/2010
12510062 Board of Management St Pauls Senior National School	Permission for development that will consist of 1 no. temporary accommodation building unit to the south of St Paul's Senior National School. This will house 1 no. classroom, 1 no. resource room & associated toilets (total area 105m²). The development will also include foul & surface water connections to existing mains, & have both paths & ramped access	St Pauls Senior National School, Rathmullen, Drogheda, County Louth	GRANT PERMISSION 01/08/2012

17481 Board of Management St Pauls Senior National School	Permission for development to consist of changes to previously granted planning permission (ref 11510084) to provide a 50m2 extension to the approved school to facilitate further education for parents. External finishes of the approved school will be render, with amendments to windows and clerestorey windows changed to roof lights. Site amendments consist of the retention of the existing 2 storey boiler house for use as a bin store, one additional parking space and a walking track. The boundary to the site will be modified with the adjustment of the approved set-down and construction of an access point along the Rathmullan Park Road for Emergency Service vehicles to access to the rear of the school.	St. Johns JNS and St.Pauls SNS, Rathmullan, Drogheda, Co. Louth	GRANT PERMISSION 23/06/2017
10510083 B.O.M. St. Paul's Senior N.S.	2 no. temporary accommodation building UNITS to the south, housing 4 no. classrooms (c.328 sq.m.), including foul & surface water connections to existing mains & with paths & ramped access to both building units.	Rathmullen, Drogheda	GRANT PERMISSION 24/08/2010
11510084 Board of Management of St. Johns JNS & St. Pauls SNS	Permission for the demolition of the existing school buildings & prefabricated accommodation and the construction of a new 2 storey 7570m² combined school building for both schools. The new development will consist of 44 classrooms, 4 general purpose rooms, a catering kitchen, dining hall & associated accommodation. The development will also consist of all associated site works including a new set down area, staff parking for 114 cars, hard & soft play areas, bus set down on Marley's Lane & Rathmullen Park & will also include foul & surface water connections to existing mains & surface water attenuation tanks below ground. New 2.5m high boundaries consisting of a 600mm high brick plinth & 1.9m high railings are proposed along Marley's Lane & Rathmullan Park. Vehicular access will be provided from Marley's Lane only	St. John's JNS & St. Paul's SNS, Rathmullen, Drogheda, County Louth	GRANT PERMISSION 20/12/2011
1946 Becton Dickinson & Company Limited	Permission for an extension to existing manufacturing facility including new mezzanine floors within the proposed extension; circulation road; lorry parking area and turning area; new sprinkler tank and pump house and all associated site development works.	Donore Road, Drogheda, Co Louth	GRANT PERMISSION 30/01/2019
16723 Mr Paul Kelly	Permission for a development will consist of provision of a 9,858 sq.m. Industrial/ Warehousing building for employment generating uses, designed and arranged to provide for up to a maximum of 8 individual units, together with car parking, and all associated site development works.	Donore Industrial Estate, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 10/10/2016
1664 Mullen's Coach & Mini Bus Hire	Permission for development to consist of construction of a new bus repair / maintenance workshop, vehicle wash bay, on site parking along with all associated siteworks.	Marley's Lane, Rathmullen, Drogheda, Co. Louth	GRANT PERMISSION 08/02/2016

18854 Advanced Environmental Solutions (Ireland) Ltd	Permission consisting of (a) retention of (1) an existing end of life tyre storage bay comprising temporary 3.10m high removable pre-cast concrete proprietary retaining block wall, (2) an existing equi-wall storage bay comprising temporary 4m high removable block wall and (b) permission for tyre shred storage bay comprising 6m high mass concrete walls which will replace an existing temporary bay formed by removable pre-cast concrete proprietary block walls at the facility.	Donore Road, Drogheda, County Louth	GRANT PERMISSION 23/10/2018
1637 Dawn Paper & Tissue Manufacturing Ltd.	Permission for construction of industrial building and ancillary office accommodation on footprint of former building on site which was destroyed by fire, single storey security hut and all associated site works.	Industrial Estate, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 26/01/2016
20560 Urban Life	Permission for development to consist of the demolition and clearance of all buildings and structures on site including demolition of five existing houses and a domestic garage and outbuildings associated with Swan Yard. The planning application site is bounded to the east by George's Street, to the south by Trinity Gardens, to the west by the rear gardens of the dwellings within Trinity Gardens and to the north by a property fronting George's Street and associated rear garden. The development provides for a creation of a new vehicular entrance off the local access road to Trinity Gardens to the south of the application site including a new footpath and public lighting along the southern boundary and the construction of a 'Build to Rent' residential development comprising to two buildings (Block A & Block B) ranging in height from two to 6 storeys, with basement level in Block A only, to contain 65no. Apartments (40no. In Block A and 25no. In Block B) including duplex type apartments and communal meeting room and management office in Block A. 3no. Apartments within Block A will have there own door access onto Georges Street. The development also provides for 22no. Car parking spaces, an ESB substation and a communal courtyard with associated landscaping, bin storage and bicycle parking and all associated site developments works and boundary treatments	Georges Street & Trinity Gardens, Drogheda, Co Louth	DECISION DUE 22/09/2020
20537 Eir (Eircom Limited)	Permission for development consisting of replacement of an existing telecommunications support structure (overall height of 21.1 metres) with a proposed new lattice tower (overall height of 31.5 metres) carrying the telecommunications equipment transferred from the existing structure and the addiction of new telecommunications antennas, dishes, and associated equipment together with new ground level equipment, together with new ground level equipment and fencing	Donore road Industrial estate, Drogheda, Co Louth	DECISION DUE 15/09/2020

20275 Maybeck Limited	Permission for amendments to previously permitted development granted under PL18176 for development at site previously used as the Roadstone Batching Plant that incorporates the lower section of the previous batching plant, bounded by Donore Road to the north, the Watery Steps to the east, the upper section of the batching plant to the south and the Bloomsbury Centre to the west. The amendments to the development will consist of A. Removal of the basement car park and proposed 28 no. surface car parking spaces located to the rear of Block A. B. Modification of the 66 apartment layouts to accommodate elderly residents, comprising of 4 no. 1 bedroom apartments, 54 no. 2 bedroom apartments and 8 no. 3 bedroom apartments. The total number and mix of units and gross floor areas have not changed. C. Modification to the elevations and sections to reflect the amended apartment layouts. D. Minor modification of the positioning of the 3 blocks on the site and their composition. E. Modification of the communal facility, bin stores and general landscaping. F. Adjustment of the existing vehicular site access off Donore Road and introduction of two new pedestrian site access points; one at the foot of the Water Steps with a proposed ESB substation and a second access point off Donore Road, all as granted under PL 18176. G. All associated amendments to roof plant, site lighting, signage, services, landscaping, external furniture, related infrastructure and site development works in conjunction with the amendments noted in points A-F	Lagavooren, Donore Road, Drogheda, Co Louth	DECISION DUE 06/09/2020
20110 Irish Breeze T/A Waterwipes	Permission for development at existing manufacturing plant consisting of the redevelopment and extension of its existing facility to incorporate new manufacturing lines, office and welfare accommodation. The application specifically includes: 1. A 1463m2 by 8.06m high sing storey extension to the West of and adjoining the existing facility. This extension shall include a two storey internal plant room on its Northern end with depressed loading docks at its Southern end and shall be clad in Insulated Metal Cladding. 2. Demolition of the existing internal office area and its relocation within the existing building footprint along its Northern elevation. 3. Recladding and alterations to the existing building elevations to match with new extension incorporating new fenestration on the Northern and Eastern elevations and a new building entrance area on the North East corner of the existing building. 4. External yards and hardstanding including new perimeter roadways and external plant areas. 5. Relocation of the existing site entrance and the construction of a new site exit only onto Matthews Lane South, along with new boundary fence and sliding gates	Donore Road, Drogehda, Co. Louth	DECISION DUE 10/09/2020

19834 Brugha Developments Ltd.	Permission for development on a site of 0.5779 ha at and to the rear of no.'s 51-55 Hardman's Gardens. Permission is sought for the demolition of the 5 derelict 2 storey cottages at the site, the clearance of all overgrown vegetation and the development of a mixed use scheme ranging in height from 2 no. storeys to 5 no. storeys with basement level. The development proposes: 40 no. residential units, comprising 7 no. houses (all 2 bed with rooftop PV arrays in 2 no. terraces) and 33 no. apartments (2 no. 1 bed, 28 no. 2 bed and 3 no. 3 bed in 2 no. connected blocks, with balconies visible on all elevations); commercial building (500.7sqm), comprising pharmacy (72.2 sqm), café/bakery selling hot and cold food for consumption on and off the premises (83.5sqm), medical centre (275sqm) and communal circulation space (70sqm); the creation of a new multi-modal entrance onto Hardman's Gardens and a pedestrian and cycle entrance at Scarlet Crescent; 52 no. car parking spaces at basement and street levels; 135 no. cycle parking spaces at basement level and in 2 no. locations at street level; landscaping; substation; and all other ancillary site development works including lighting, boundary treatments and services.*Significant Further Information submitted 21/05/20 has revised the subject development - Clarification of Further Information requested 18/06/2020 resulted in Significant Further Information being submitted on 17/07/2020 which provided for, inter alia, the relocation of the pelican crossing.**	51-55 Hardman's Gardens, Drogheda, Co Louth	CONDITIONAL GRANT PERMISSION 13/08/2020
19702 Drogheda Boys Football Club	Permission for a new single storey clubhouse with 30 no. car parking spaces and all associated site works.	Marley's Lane, Rathmullen, Drogheda, Co Louth	CONDITIONAL GRANT PERMISSION 22/01/2020

APPENDIX 3.3

PLANNING HISTORY FOR THE SITE AND ADJACENT LANDS

PREPARED BY AWN CONSULTING LTD.

Meath/Louth County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB151219 IDA Ireland	Development will consist of the erection of 2.4m high wire mesh fence to western boundary of existing car park	IDA Drogheda Business and Technology Park, Donore Road, Drogheda, Co. Meath	GRANT PERMISSION 15/01/2016
SA60448 Coffey Construction Ltd	Retention of ESB sub-station and switch room to the norther end of the IDA Business and Technology Park	Donore Road, Rathmullan, Drogheda Co Meath	GRANT PERMISSION 30/10/2006
SA60236 IDA Ireland	5056sqm four storey office building with roof plantroom and associated access road, car parking, hard and soft landscaping and retention of a 21.63sq.m.single storey security hut and associated landscaping and site works on a 1.27 hectare site.	IDA Business & Tech Pk., Donore Rd, Rarthmullanr	GRANT PERMISSION 13/07/2006
SA50502 IDA Ireland	an additional carpark adjacent to the site of office building, Unit D7 and consequent amendments to the previously approved site for Unit D7 (Reg. Ref. SA/40383 and SA/50286)which will consist of revised site area, boundaries and carparking layout, associated hard and soft landscaping works and ancillary woks on an overall site of 1.29 hectares	Donore Rd Rathmullan Drogheda, Co. Meath	GRANT PERMISSION 22/02/2006
SA50286 IDA Ireland	Erection of two no. 2164 sq.m, two storey office buildings with third storey plantroom, known as Units D2 and D3, 10.120m in overall height, with associated access roads, car parking, hard and soft landscaping and amendments to the previously approved site for office building, Unit D7 (formerly know as Unit 12D), Reg. Ref.SA/40383 to consist of revised site area, boundaries and car parking layout, associated hard and soft landscaping works, ancillary works and a new east west estate road on an overall site 1.9 hectare	IDA Business Park, Donore Road, Rathmullen, Drohgeda, Co Meath	GRANT PERMISSION 21/09/2005
SA40383 IDA Ireland	the construction of a 2203sq.m two storey office building with thrid storey plantroom, 10.120m in overall height, with associated access roads, car parking, hard and soft landscaping, amendments to previously approved estate road and ancillary infrastructural works on a 0.72 hectare site to thenorthernside and adjacent the eastern access road roundabout	IDA Business & Technology, Donore Road, Rathmullan, Drogheda, Co Meath	GRANT PERMISSION 23/11/2004
SA40284 IDA Ireland	erection of a 2,203 sqm, two-storey office building with third-storey plantroom, 10.120 m in overall height, with associated access roads, car-parking, hard and soft landscaping, amendments to previously - approved estate road and ancillary infrastructural works on a 0.76 hectare site at the eastern side of IDA Drogheda Business & Technology park	Donore Road, Rathmullen, Drogheda Co. Meath	GRANT PERMISSION 29/08/2004

SA30020 IDA Ireland	an advanced business and technology unit, with a 2031 sq m. work area, 382 sq m. administration/office area with associated ancillary service and plant spaces. Car parking for 80 cars will be provided, along with a paved service yard and landscaping	IDA , Drogheda Business Park	GRANT PERMISSION 15/04/2013
SA20311 Industrial Development Agency	the demolition of 3 No. Dwellings	Donore Road Rathmullen Co Meath	GRANT PERMISSION 26/02/2003
00/1642 Industrial Development Agency	site development works for proposed IDA Drogheda Business Park, inclusive of internal roads & access junction to Donore Road, sewers, water mains, pavements & related landscaping works. An Environmental Impact Statement accompanies this application	Rathmullen Drogheda Co Meath	GRANT PERMISSION 11/12/2000
SA30292 IDA Ireland	the erection of a 6.7m high x 2.2m wide double sided poder coated aluminum sign with lettering at the entrance of the IDA Business and Technology Park	Donore Road, Rathmullen, Drogheda	GRANT PERMISSION 26/11/2003
00/1642 Industrial Development Agency	site development works for proposed IDA Drogheda Business Park, inclusive of internal roads & access junction to Donore Road, sewers, water mains, pavements & related landscaping works. An Environmental Impact Statement accompanies this application	Rathmullen, Drogheda, Co Meath	GRANT PERMISSION 12/12/2000
00/4121 Industrial Development Agency	3 no. 4 story office buildings, 1 single story security control building inclusive of associated hard and soft landscaping, car parking, external signage and associated site development works	The Proposed IDA Drogheda Business Park Donore Road, Rathmullen	GRANT PERMISSION 11/12/2003
99/2466 Industrial Development Agency	a road entrance onto Drogheda to Donore Road for proposed future I.D.A. Business Park which will be subject to a seperate planning application & Environmental Impact Statement	Rathmullen, Drogheda, Co Meath	GRANT PERMISSION 12/02/2000
FS20017 CAP Developments LLC	Construction of a new 2-storey data storage facility building	Drogheda IDA Business & Technology Park, Drogheda, Co Meath	CONDITIONAL GRANT PERMISSION 03/06/2020
FS20024 CAP Developments LLC	Construction of a new MV Building	Drogheda IDA Business and Technology Park, Drogheda, Co Meath	CONDITIONAL GRANT PERMISSION 13/03/2020
FS20025 CAP Developments LLC	Construction of a new Pump Room Building	Drogheda IDA Business and Technology Park, Drogheda, Co Meath	CONDITIONAL GRANT PERMISSION 13/03/2020
FS20026 CAP Developments LLC	Construction of a new Security Hut Building	Drogheda IDA Business and Technology Park, Drogheda, Co Meath	CONDITIONAL GRANT PERMISSION 13/03/2020

FS20027 CAP Developments LLC	Construction of a new Sub-Station building	Drogheda IDA Business and Technology Park, Drogheda, Co Meath	CONDITIONAL GRANT PERMISSION 13/03/2020
LB191735 CAP Developments LLC	alterations to existing road infrastructure within the site and clearance of the site (including removal of existing internal roadways and removal / diversion of services) to make way for the proposed development; Construction of a two storey (with mezzanine levels at both storeys) data storage facility building with a maximum overall height of c. 25 metres, containing data halls, associated electrical and AHU Plant Rooms, a loading bay, maintenance and storage space, office administration areas, screened plant and solar panels at roof level, all within a building with a total gross floor area (GFA) of c. 28,573 sq.m; Emergency generators (26 no.), emission stacks and associated plant are provided in a fenced compound adjacent to the data storage facility, along with a single emergency house supply generator; A 6 MVA substation and associated 6MVA electricity connection; A water sprinkler pump room, MV Building, unit substation, water storage tanks, humidifier tanks and diesel tanks and filling area; Modification of the existing entrance to the subject site (from the estate road to the east), which will function as a secondary entrance providing for emergency and construction access. A new main entrance and access control point to the lands is proposed (also from the estate road to the east) and a single-storey gate house/ security building at this entrance with a GFA of c. 29.5 sq.m.; Construction of internal road network and circulation areas, footpaths, provision of 50 no. car parking spaces and 26 no. cycle parking spaces within a bicycle shelter; Landscaping and planting (including provision of an additional planted berm to the northern boundary, and alterations to existing landscaping adjacent to the entrance to the Business and Technology Park), boundary treatments, lighting, security fencing, bollards and camera poles, bin store, and all associated site works including underground foul and storm water drainage network, attenuation areas, and utility cables, on an application site area measuring 19.46 hectares. An EIAR has been submitted with this application	Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath	CONDITIONAL GRANT PERMISSION 06/02/2020

4.0 ALTERNATIVES

4.1 INTRODUCTION

EIA legislation and the prevailing guidelines and best practice require that EIA Reports consider 'reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects'. This section will address:

- Do Nothing Alternative;
- Alternative project locations;
- Alternative designs/layouts;
- Alternative processes; and
- Alternative mitigation measures.

This chapter describes the alternatives that were considered for the Proposed Development, where applicable, under each of these headings and the reasons for the selection of the chosen options, including a comparison of environmental effects.

4.2 DO NOTHING ALTERNATIVE

The wider landholding is subject to an extant permission (MCC ref: LB/191735) for a data storage facility and ancillary development (hereafter the Permitted Development). A 6 MVA unit substation and associated 6MVA (10kV) electricity connection are in place to support interim power demand for Permitted Development.

In the event that the Proposed Development does not proceed, further development of additional data storage facilities on this site would be left without adequate permanent power supply.

There are no environmental effects associated with the do-nothing scenario

The Do-Nothing scenario has been considered in each chapter of the EIA Report.

4.3 ALTERNATIVE PROJECT LOCATIONS, SCALE AND SIZE

<u>GIS Substation</u>
The Proposed Development is based on a functional specification provided by EirGrid and as required by their connection agreement. As such the scale and size is determined by their specification. Six bays are required to service the Permitted Development (and indicative future masterplan development and EirGrid require two additional bays as part of their specification.

The location of the proposed GIS substation was chosen with respect to the overall future indicative Masterplan for the data storage facility site, (please refer to Chapter 2 Figure 2.2 which shows the indicative masterplan submitted with the planning application for permitted datacentre development (MCC ref: LB/191735). The location of the proposed GIS substation is deemed to be the most logical location on the site for such a development.

110kV Transmission Line Route

A number of route options for the 110 kV were considered:

Option 1 – Red route along the M1 -Length 2.2 km
Option 2 – Blue route along the Slane road, and Donore road, Length 5.8 km
Option 3 – Yellow route - along the Slane Rathmullen and Donore roads–4.9 km
Option 4 – Green route – drops down within the from existing masts at the Proposed Development site – 0.31 km

Figure 4.1 presents the grid route options considered and these are described below.

Option 1 – Red route: requires access through third party lands along the eastern side of the M1 motorway and is a length of 2.2 km. The suspension bridge across the Boyne has not been designed to accommodate a twin 110kV circuit and as such directional drilling beneath the River Boyne would be necessary and which would necessitate additional land take.

Option 2 -Blue route: is to the west. The route is expected to exit the subject site via directional drilling beneath the M1 motorway onto the L1601 Donore Road. The twin circuit will continue within the public carriageway of the L1601 Donore road, turning north on an unnamed public road to the River Boyne. Directional drilling would be required for c. 300m to cross beneath the River Boyne to the Drybridge substation. The overall length is 4.9 km

Option 3 – Yellow route: exits the subject site at the IDA park entrance. The route continues eastwards along the L1601 Donore road and turns north onto Marleys Lane. At the junction with the Rathmullen road the route turns westwards until it meets the proposed directional drill crossing beneath the River Boyne and continues as per Option 2 above.

Option 4 – Green route – drops down from the overhead line at the Proposed Development site and is fully described in Chapter 2.

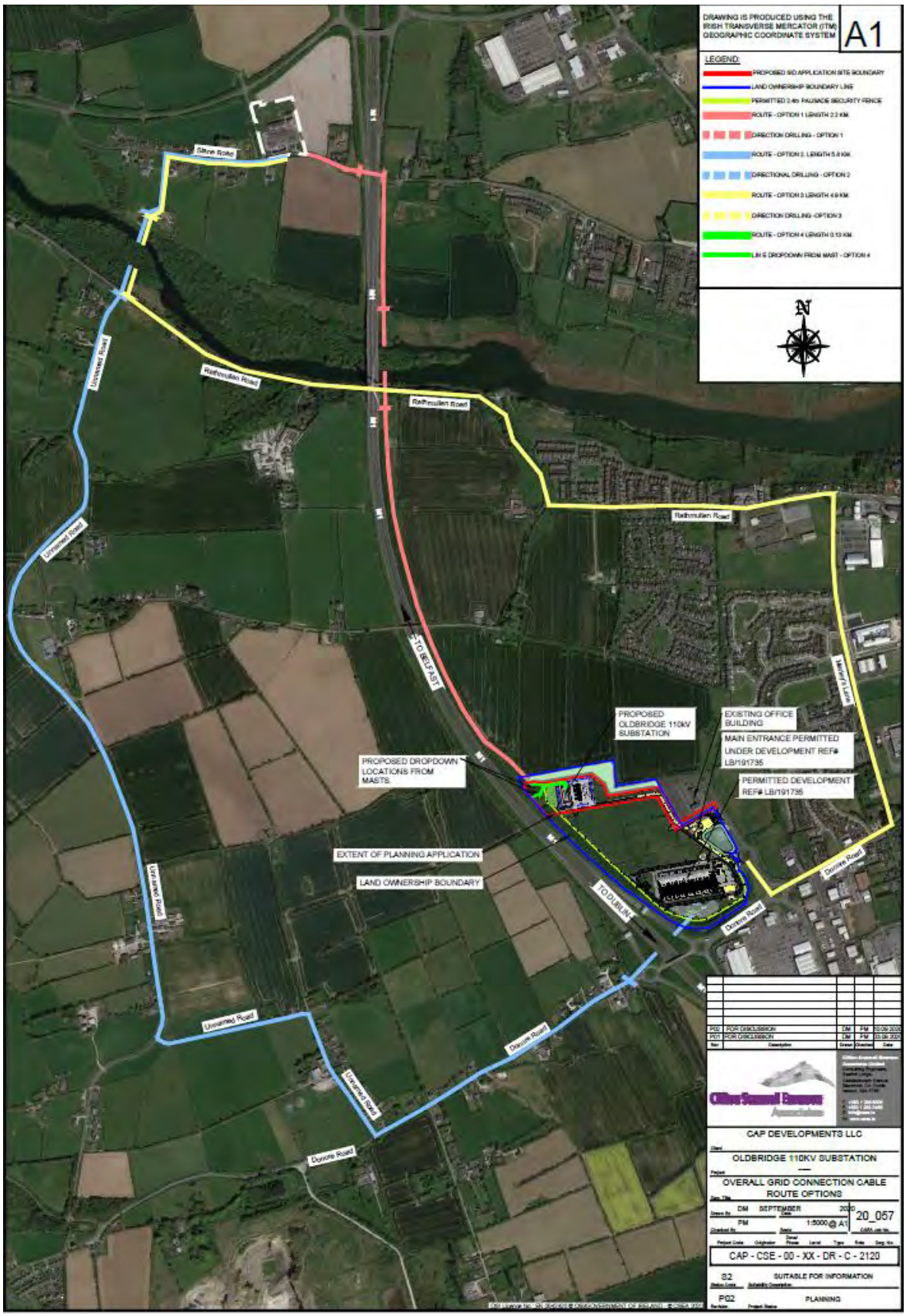

Figure 4.1 Grid Route Options

An environmental appraisal of the environmental effects of Options 1 - 4 was undertaken as part of the route selection process and is shown below. There were no environmental constraints which would preclude development of either route options. However, options 1-3 require a design measure (horizontal drilling) for crossing the

River Boyne (SAC). A review of relevant environmental criteria by each specialist show a preference for Option 4 based on least environmental impacts during construction.

In terms of the operational phase for either of the route options, each of the environmental factors were considered to have a *long-term*, *neutral* and *imperceptible* impact on the environment.

For construction phase, the duration of impacts for all four route options would be *short term* as the construction works will have a duration of less than 1 year. For all of the options there are no significant environmental effects predicted for the construction phase. However, Option 4 is the shortest route by far (0.31 km) and as it does not cross the River Boyne (SAC), there is no requirement for horizontal drilling beneath the river. As such the potential environmental effects are significantly reduced for option 4 as it is not near a sensitive receptor (river, residential, landscape heritage). It also requires significant less soil removal and traffic impact due to its significantly shorter length. As such it is concluded that Option 4 is the most preferable route having the least environmental effects.

Each of the environmental factors were assessed for the construction phase by the relevant consultant to determine the more preferred and less preferred route option.

Table 4.1 Assessment of environmental effects for route options

Environmental Factor	Option 1(red)	Option 2 (blue)	Option 3 (yellow)	Option 4 (green)
Land, Soils Geology	Loss of undisturbed land along M11 and loss of agricultural land at R Boyne crossing (directional drilling).	Potential for contaminated land along roadway and loss of agricultural land at R Boyne crossing (directional drilling).	Potential for contaminated land along roadway and loss of agricultural land at R Boyne crossing (directional drilling).	Minimal loss of land and undisturbed land therefore low potential for encountering contamination. Land already zoned for development.
Water	2.2 km route may require crossing of streams and ditches and will require directional drilling beneath the Boyne	5.8 km route may require crossing of streams and ditches and will require directional drilling beneath the Boyne	4.9 km route may require crossing of streams and ditches and will require directional drilling beneath the Boyne	0.31 km requires no water crossings. No potential run-off to any watercourse.
Biodiversity	2.2 km route primarily along improved grassland but would result in loss of sections hedgerows.	5.8 km route along artificial ground therefore minimal impact	4.9 km route and has highest potential for impact on the the River Boyne SAC and SPA as route runs along the river.	0.31 km route and is furthest from the River Boyne SAC and SPA. No ecological constraints noted.
Air, noise, traffic and human beings	2.2 km route is located mostly along the M11 and not near residential development for most of route.	5.8 km route along existing roads will have short term effects in terms of dust noise and traffic.	4.9 km route along existing roads will have short term effects in terms of dust noise and traffic.	0.31 km route and is not impacting on existing roads or residential development.
Archaeological and Landscape	28 recorded archaeological monuments within c. 100 m of this route. Most of which were excavated during the M50 construction but indicative of potential for archaeological finds. If included in embankment, then minimal impact in terms of landscape	7 recorded archaeological monuments within c. 100 m of this route. As in the existing roadway highly unlikely to have any impact on archaeology or landscape.	4 recorded archaeological monuments within c. 100 m of this route. As in the existing roadway highly unlikely to have any impact on archaeology or landscape. The NE section of Option 3 runs along the southern bank of the River Boyne in an area of significant archaeological potential and protected landscape	Archaeological excavations have been completed for the development area. Low potential for landscape impact.

4.4 ALTERNATIVE DESIGN/LAYOUTS

The proposed GIS substation is designed based on requirements stipulated by the TAO i.e. ESB Networks. The design of the substation units is centred on the equipment requirements of ESB Networks that are required to provide an efficient and safe service. From a "design and layout" point of view, therefore, the flexibility to select alternative designs and layouts was not available to the Applicant.

The design of the cable bays is based on ESB Networks mandatory specifications. As such there are no reasonable alternatives. The location of the 49kVa transmission line was required to be located as shown in the design as there are no reasonable alternatives. Alternative design options for the 49kVA cable installation that were considered included above overhead lines. By their very nature, above overhead lines require corridors to run in which must be clear of all other development. In the case of the 49kVA cable installation, a corridor 12m would be required. This space was not available and therefore the underground solution was chosen.

4.5 ALTERNATIVE PROCESSES

This section typically examines the project processes in relation to likely emissions to air and water, likely generation of waste and likely effect on traffic to determine the process that is least likely to impact on these parameters.

The 110Kv transmission line cable installation will become an integral part of the national high voltage electricity grid which is currently operated by ESB Networks. As such the underground cable installations must meet ESB Network's strict specifications to ensure it will be seamlessly absorbed into the national grid infrastructure and can provide a reliable power supply. From a "process design" point of view, therefore, the flexibility to select alternative processes for integrating into the current national grid is not available to the Applicant. As such there are no reasonable alternatives.

The Eirgrid's specifications for auxiliary power supplies (i.e. the 49kVA cable installation) are set out in Document Reference: XDS GFS 08 001 R2 *Functional Specification Station Auxiliary Power Supplies*. As such there are no reasonable alternatives for the 49kVA line.

In terms of the proposed processes, the proposed GIS substation and new cable bays will employ the same electricity generation and transmission process that are used by ESB Networks at their other facilities in Ireland and represents the most up-to-date and state of the art processes currently available. As appropriate, alternative processes are considered on an ongoing basis by ESB Networks as a part of each of their operations based on many factors including technical feasibility, environmental impact, efficiency, security, reliability and cost. Therefore, from a "process design" point of view, the flexibility to select alternative processes for integrating into the current national grid is not available to the Applicant. There are no reasonable alternatives available.

4.6 ALTERNATIVE MITIGATION

For each aspect of the environment, each specialist has considered the existing environment, likely impacts of the Proposed Development and reviewed feasible mitigation measures to identify the most suitable measures appropriate to the environmental setting of the Proposed Development. In making a decision on the

most suitable mitigation measure the specialist has considered relevant guidance and legislation (these are identified in the table of mitigation measures in Appendix 1.1 of Chapter 1). In each case, a comparison of environmental effects was made, and the specialist has reviewed the possible mitigation measures available and considered the use of the mitigation in terms of the likely residual impact on the environment. The four established strategies for mitigation of effects have been considered: avoidance, prevention, reduction and offsetting (not required in this Proposed Development). Mitigation measures have also been considered based on the effect on quality, duration of impact, probability and significance of effects.

The selected mitigation measures are set out in each of the EIA Report Chapters and are summarised in Appendix 1.1 of Chapter 1.

4.7 CONCLUSIONS ON ALTERNATIVES

The selected route for the 110kV transmission line was deemed to be most suitable route for the Proposed Development taking into account access to land, cost and environmental effects. During construction the proposed 110kV route will have a ***short-term***, ***neutral*** and ***imperceptible*** environmental effect. It is noted that the proposed route and the alternative routes considered were considered to have a ***neutral, imperceptible, long-term*** environmental effect during the operational phase.

The design of the proposed GIS substation and new cable bays have been selected with due regard to minimising the environmental and visual impact once in situ. The selection of the design has been constrained to the standard specifications required by ESB Networks for connection to the national grid.

In conclusion, it is considered that the Proposed Development and design is the most suitable choice to provide the support required to meet the power requirements of the Permitted Development and potential future indicative developments.

5.0 HUMAN HEALTH AND POPULATION

5.1 INTRODUCTION

This chapter evaluates the impacts of the Proposed Development on population and human health.

In accordance with the Draft EPA EIA Report Guidelines (2017) and EPA Draft Advice Notes for EIS (2015), this chapter has considered the *"existence, activities and health of people"* with respect to *"topics which are manifested in the environment such as employment and housing areas, amenities, extended infrastructure or resource utilisation and associated emissions"*. Natural hazards are considered in Chapter 2 (Section 2.7) and Chapter 6. Issues examined in this chapter include:

- Demography;
- Population;
- Employment;
- Social Infrastructure;
- Tourism;
- Air Quality;
- Noise & Vibration;
- Material Assets;
- Traffic; and
- Health and Safety.

Where these topics are dealt with in further detail elsewhere in this EIA Report, the relevant chapters have been cross referenced in this Chapter.

5.2 METHODOLOGY

As per Article 3 of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 2014/52/EU:

"*1. The environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors:*

(a) population and human health;
(b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
(c) land, soil, water, air and climate;
(d) material assets, cultural heritage and the landscape;
(e) the interaction between the factors referred to in points (a) to (d).

2. The effects referred to in paragraph 1 on the factors set out there in shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned."

A 2017 publication by the European Commission, *Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report*, considered that:

"*Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of*

the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."

This chapter will follow these EC guidelines, and will examine the health effects relevant to the Proposed Development as they relate to a relevant, defined study area. The effects of the Proposed Development on the population and human health are analysed in compliance with the requirements of the EPA Draft EIA Report Guidelines 2017.

5.2.1 Assessment of Significance & Sensitivity

The assessment of significance of is a professional appraisal based on the sensitivity of the receptor and the magnitude of effect.

Within any area, the sensitivity of individuals in a population will vary. As such, it would be neither representative of the population, nor a fair representation of the range of sensitivities in a population, were an overall sensitivity classification assigned to the population in question. As such, the precautionary principle has been adopted for this assessment, which assumes that the population within the study area is of a uniformly high sensitivity.

5.2.2 Magnitude of Impact

The magnitude of predicted impacts has been quantified in this assessment using the terms outlined in Table 5.1 below.

Table 5.1 Description of magnitude of predicted impacts

Magnitude	Description of Magnitude
High	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a **major change** to existing baseline conditions (adverse or beneficial)
Medium	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a **moderate change** to existing baseline conditions (adverse or beneficial)
Low	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would result in a **minor change** to existing baseline conditions (adverse or beneficial)
Negligible	Change in an environmental and/or socio-economic factor(s) as a result of the Proposed Development which would not result in change to existing baseline conditions at a population level, but may still result in an individual impact (adverse or beneficial)
No change	No change would occur as a result of the Proposed Development which would alter the exiting baseline conditions (adverse or beneficial)

5.2.3 Significance of Effects

The assessment of significance of effects in this assessment is a professional appraisal and has been based on the relationship between the magnitude of effects (Section 5.2.2) and the sensitivity of the receptor. Table 5.2 below provides a matrix on the measure of the significance of effects based on these parameters.

Table 5.2 Matrix illustrating the significance of effects as determined by the relationship between the magnitude of impact and the sensitivity of receptors

		Magnitude of Impact			
		Negligible	**Low**	**Medium**	**High**
Sensitivity of Receptor	**Negligible**	Negligible	Negligible or minor	Negligible or minor	Minor
	Low	Negligible or minor	Negligible or minor	Minor	Minor or moderate
	Medium	Negligible or minor	Minor	Moderate	Moderate or major
	High	Minor	Minor or moderate	Moderate or major	Major

5.3 RECEIVING ENVIRONMENT

The Proposed Development is to be located on a c. 3.43 hectare greenfield site located at Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath (refer to Figure 1.1 in Chapter 1).

The Proposed Development is located within the catchment of Boyne River, approximately 1km to the south of the River. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no watercourses on or in the immediate vicinity of the Proposed Development site.

The nearest European sites to the Proposed Development are associated with the Boyne River and include the River Boyne And River Blackwater SAC (Site Code 002299), which is located c. 1km to the north, and the River Boyne and River Blackwater SPA (Site Code 004232), which is located c. 1.28 km to the north.

Downstream the waters of the River Boyne enter the River Boyne Estuary with its European sites, the Boyne Coast And Estuary SAC (Site Code 001957) and the Boyne Estuary SPA (Site Code 004080), which are located c. 5.15 km and c. 3.95 km to the north east of the Proposed Development respectively.

The surrounding area is described in further detail in Chapter 2 (Description of the Proposed Development), section 2.1.1.

5.4 STUDY AREA

The study area (Figure 5.2) selected for the assessment of the impact on human health as a result of the Proposed Development was defined as the Electoral Divisions (ED) of St. Mary's (Part Rural) (ED 11047), St. Mary's (Part Urban) (ED 10047) and St. Peter's

(10041), West Gate (10003) and St. Laurence Gate (ED 10002). This study area was selected based on the electoral districts within 2 km of the Proposed Development site.

The site of the Proposed Development is located in County Meath, within the constituency of Louth, and in the electoral district of St. Mary's (Part Rural) (ED 11047). Due to the Proposed Development site's proximity to the County Louth border and the Meath East constituency, these areas have also been considered in this chapter to provide a representative overview of the area within which the Proposed Development site is located.

The Proposed Development site is located within the Mid-East region, as defined by the Nomenclature of Territorial Units for Statistics developed by Eurostat. The Mid-East region comprises counties Meath, Louth, Kildare and Wicklow.

5.5 EXISTING BASELINE CONDITIONS

5.5.1 Population and Demographics

The most recent census of population was carried out by the CSO on the 24th April 2016. The previous census was completed on the 10th of April 2011 and before that on 23rd April 2006. The census compiles data for the whole state as well as smaller individual areas including counties, cities, towns and electoral divisions. Taking into consideration the location of the Proposed Development, the census information on population, age profile, employment and social class, has been analysed in relation to the Louth and Meath East constituencies.

The latest census data shows that the population in the Louth area grew by 5.0% between the years 2011 and 2016 compared with only 3.8% nationally. Growth of 5.0% was also seen in the Meath East area over the same period. The average rate of population growth across the study area was 5.0%, the electoral division for the site, saw a higher rate of growth with an increase of 9.2% (Table 5.3). Projections for the national and the county populations are predicted to continue this trend of population growth into the short-term future.

Table 5.3 Population change at National, primary and secondary hinterland level from 2011 (published April 2012) to 2016 (published May 2017) (*Source: www.cso.ie*)

Area	2011	2016	% Change 2011-2016
State	4,588,252	4,761,865	+ 3.8
Louth	143,272	150,924	+ 5.0
Meath East	86,572	91,142	+ 5.0
St. Mary's (Part Rural)	10,769	11,864	+ 9.2
St. Mary's (Part Urban)	6,563	6,859	+ 4.3
St. Peter's	9,151	9,721	+ 5.9
West Gate	6,042	6,305	+ 4.2
St. Laurence Gate	4,004	4,068	+ 1.6
Study Area (Mean)	7,306	7,763	+ 5.0

Age Profile

The age profile of the population in the area is an important parameter as it provides a good insight into the potential labour force, the demand for schools, amenities, other facilities and the future housing demand.

Table 5.4 shows the age profiles at National, primary and secondary hinterland level for 2016.

Table 5.4 Age profile at National, primary and secondary hinterland level 2016 (published July 2017) (*Source: www.cso.ie*)

Area	0-14	15-24	25-44	45-64	65+	Total Persons
State	21%	12%	30%	24%	13%	4,761,865
Louth	24%	12%	29%	23%	12%	150,924
Meath East	24%	12%	29%	24%	11%	91,142
St. Mary's (Part Rural)	28%	10%	32%	21%	9%	11,864
St. Mary's (Part Urban)	28%	13%	30%	23%	6%	6,859
St. Peter's	29%	12%	31%	20%	8%	9,721
West Gate	19%	12%	29%	25%	15%	6,305
St. Laurence Gate	20%	11%	31%	24%	14%	4,068
Study Area (Mean)	25%	12%	31%	23%	0.10	7,763

This table shows that both Nationally, the Louth and Meath East areas, and the Study Area, the dominant age grouping is 25-44 at 30%, 29% 29% and 31% of the total population, respectively. This also reflects that the overall labour force population (15-64 age group) in Louth, Meath East and the Study Area is reflective of the National level. This is in keeping with census data from 2011 and 2006.

5.5.2 Socioeconomics

Employment

Table 5.5 presents the employment statistics in 2016 compared with 2011. The data shows that unemployment decreased significantly in the County, as well as nationally, reflecting the economic recovery in recent years.

Table 5.5 Employment statistics Nationally and at County level in 2011 (published July 2012) and 2016 (published December 2017) (*Source: www.cso.ie*)

	At Work	Looking for first regular job	Unemployed having lost or given up previous job	Total in labour force	% Unemployment
2011 Labour Force					
State	1,807,360	34,166	390,677	3,608,662	11.8
Louth	52,307	1,153	14,319	89,840	17.2
Meath East	36,017	500	6,416	56,500	12.2
2016 Labour Force					
State	2,006,641	31,434	265,962	3,755,313	7.9
Louth	27,496	543	4,301	93,386	5.2
Meath East	40,128	448	3,788	58,231	7.3

The 2016 census data shows that the majority of people in employment in the Louth area are in 'Managerial and Technical' employment (26.7%) with the least represented social class being 'Unskilled' workers at (3.9%).

At a local level, the dominant social class in the St.Mary's (Part Rural) area is 'Managerial and Technical' labour (35.4%) with 'Unskilled' being the least representative (2.6%).

Education

Census data presenting the highest level of education completed by people living in the Study Area community and Louth and Meath East areas is presented in Table 5.6. The data show that higher levels of educational attainment in the Study Area are generally in line with those in Louth and Meath East.

Table 5.6 Highest level of education completed locally and at County level in 2016 for key educational levels (published 2017). (*Source: www.cso.ie*)

Area	No formal education	Primary education	Upper secondary	Honours Bachelor's Degree, Professional qualification or both	Postgraduate Diploma or Degree	Total Persons
Louth	1.8%	12.2%	18.7%	9.3%	7.2%	95,137
Meath East	1.3%	9.3%	20.0%	10.4%	8.15%	57,184
St. Mary's (Part Rural)	0.7%	7.2%	20.5%	12.1%	10.3%	7,195
St. Mary's (Part Urban)	1.8%	8.6%	21.0%	10.3%	8.0%	4,004
St. Peter's	1.4%	9.0%	20.1%	8.6%	7.1%	5,470
West Gate	2.8%	19.4%	16.7%	6.1%	3.9%	4,291
St. Laurence Gate	1.5%	12.0%	18.4%	9.5%	6.9%	2,869
Study Area (Mean)	1.64%	11.24%	19.34%	9.32%	7.24%	4,766

(Note: the table presents key milestone education levels and excludes lower secondary, technical or vocational qualification, advanced certificate/completed apprenticeship, higher certificate, ordinary bachelor degree/national diploma, Ph.D./higher or where information was not stated).

Labour Force Survey

The Labour Force Survey (LFS) is a large-scale, nationwide survey of households in Ireland carried out every three months. It generates labour force estimates which include the official measure of employment and unemployment for the state.

The results Nationally for Q2 2019 showed that there were 2,300,000 people employed in the State with 130,800 registered as unemployed. This represents a 2.0% increase in employment between Q2 2018 and Q2 2019.

In Q2 2019, the majority of people were employed in the wholesale and retail trade and repair of motor vehicles and motorcycles sectors, with industry, and human health and social work activities following closely.

Income

The below data, obtained from CSO Statbank (CIA01), demonstrate that the levels of total income per person in the Meath area are marginally higher than that within the State, with levels in Louth 10.9% lower than those in the State.

Table 5.7 Total Income per Person (Euro) for Meath, Louth and the State (published November 2019) (*Source: CSO Statbank CIA01*)

	2013	2014	2015	2016	2017
Meath	24,197	25,019	26,833	27,918	30,551
Louth	22,455	22,572	24,065	24,646	26,312
State	24,910	25,388	26,698	27,753	29,239

A similar pattern of income distribution is observed in data on disposable income per person, where in the Meath area the disposable income per person was marginally higher than that of in the State in 2015, and 7.3% lower in Louth.

Table 5.8 Total Disposable Income per Person (Euro) for Meath, Louth and the State (published December 2018) (*Source: CSO Statbank CIA01*)

	2013	2014	2015	2016	2017
Meath	18,046	18,556	20,086	19,364	21,178
Louth	17,707	17,758	18,946	824	885
State	18,898	19,265	20,334	19,660	20,714

Deprivation

Deprivation in small areas is mapped using the Pobal HP Deprivation Index. This Index draws on data from censuses and combines three dimensions of relative affluence and deprivation: Demographic Profile, Social Class Composition and Labour Market Situation. Figure 5.1 below shows graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population. In this EIA Report, the Relative Index Score is considered as the measure for deprivation, as these Relative Index Scores are rescaled such that the mean is 0 and standard deviation is 10 at each census wave. This allows for the provision of descriptive labels with the scores, which are grouped by standard deviation as seen in Table 5.9 below.

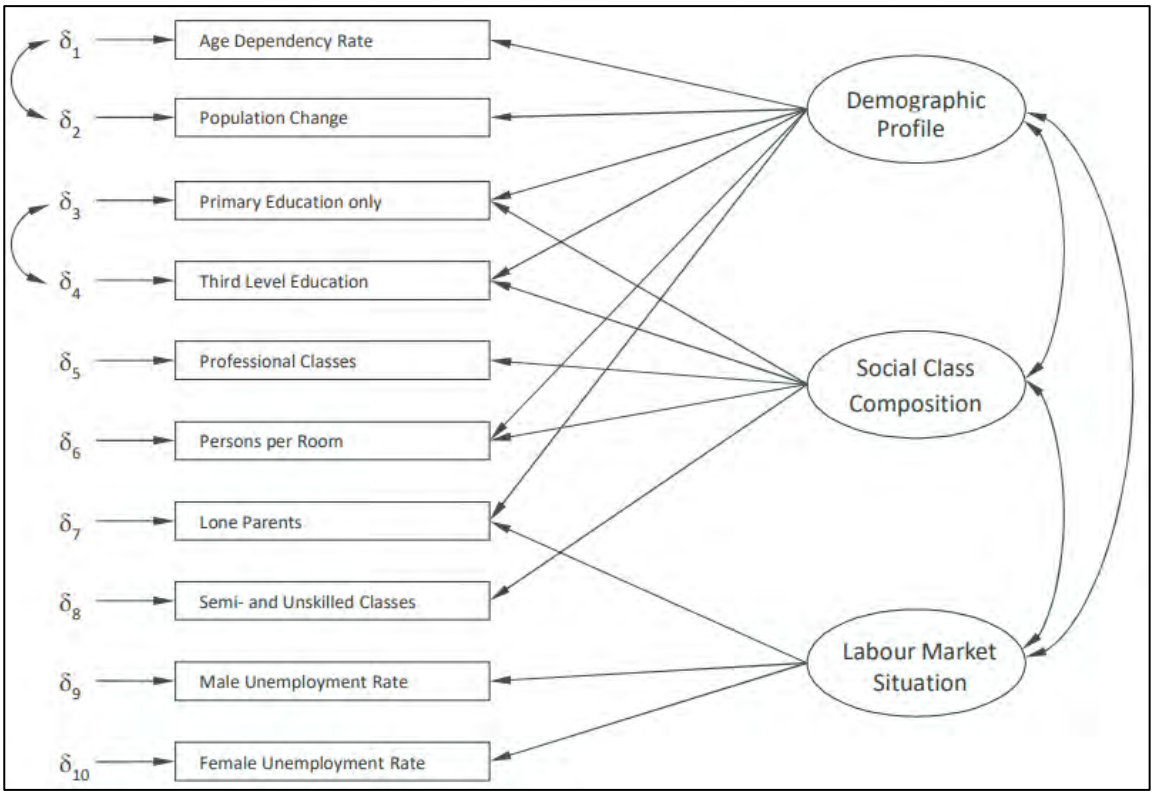

Figure 5.1. Graphical representation of how the concepts of Demographic Growth, Social Class Composition and Labour Market Situation are measured by ten key socio-economic indicators from the Census of Population.

Table 5.9 Pobal HP Index Relevant Index Score labels (*Source: Pobal HP Deprivation Index)*

Relative Index Score	Standard Deviation	Label
> 30	> 3	Extremely affluent
20 – 30	2 – 3	Very affluent
10 – 20	1 – 2	Affluent
0 – 10	0 – 1	Marginally above average
0 – -10	0 – -1	Marginally below average
-10 – -20	-1 – -2	Disadvantaged
-20 – -30	-2 – -3	Very disadvantaged
< -30	< -3	Extremely disadvantaged

The data in Table 5.10 show that the population living within the Study Area are generally classified as 'Marginally below average', with a Relative Index Score of -1.78. This is in keeping with the Louth constituency data in which the Proposed Development site is located, which is classified as 'Marginally below average' with a Relative Index Score of -2.96. Figure 5.2 below presents the Pobal HP Index map illustrating the Study Area (St. Mary's (Part Rural), St. Mary's (Part Urban), St. Peter's, West Gate and St. Laurence Gate).

Table 5.10 Pobal HP Index Relevant Index Score Figures at a local and County level (updated 2019) (*Source: Pobal HP Deprivation Index)*

	Relative Index Score	Pobal HP Description 2016
Louth	-2.96	Marginally below average
Meath East	1.83	Marginally above average
St. Mary's (Part Rural)	5.16	Marginally above average
St. Mary's (Part Urban)	-2.54	Marginally below average
St. Peter's	-1.47	Marginally below average
West Gate	-8.95	Marginally below average
St. Laurence Gate	-1.11	Marginally below average
Study Area (Mean)	-1.78	Marginally below average

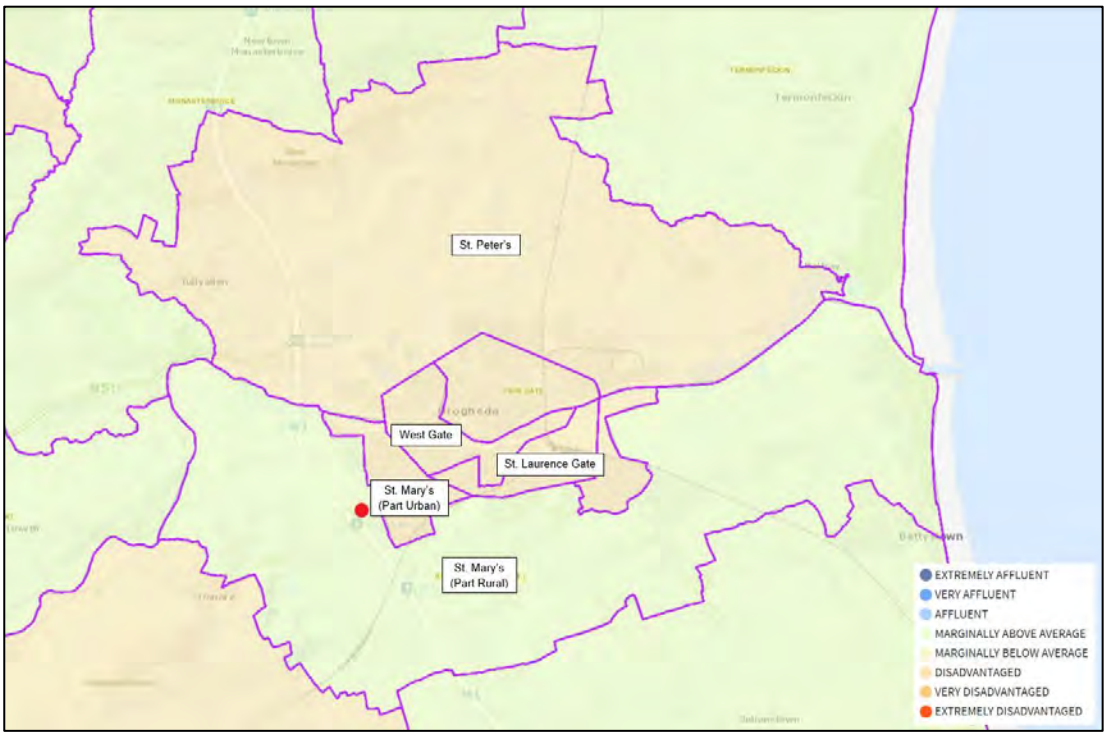

Figure 5.2. Pobal HP Index maps illustrating the Study Area (St. Mary's (Part Rural), St. Mary's (Part Urban), St. Peter's, West Gate and St. Laurence Gate). The location of the Proposed Development site is indicated with a red dot *(Source: Pobal HP Deprivation Index)*

5.5.3 Health

The following section provides a summary of various health aspects for the study area.

Physical Health

State data shows that life expectancy for both males and females has increased consistently since 1991, with female life expectancy consistently higher than male (Table 5.11)

Table 5.11 Period Life Expectancy in Ireland by sex (updated July 2015) (*Source: CSO Statbank VSA30*)

Period Life Expectancy in Ireland by sex					
	1991	**1996**	**2002**	**2006**	**2011**
Male	72.3	73	75.1	76.8	78.4
Female	77.9	78.5	80.3	81.6	82.8

A similar pattern of increasing life expectancy has been recorded in the Mid-East region, where life expectancy has been recorded as steadily increasing since 2002, with female life expectancy consistently higher than male (Table 5.12)

Table 5.12 Period Life Expectancy in the Mid-East region by sex (updated July 2015) (*Source: CSO Statbank VSA31*)

Period Life Expectancy in the Mid-East region by sex			
	2002	**2006**	**2011**
Male	75.9	77.2	79.0
Female	80.5	81.4	83.0

The rate of hospital admissions for circulatory diseases in Meath and Louth is generally in line with that in the State (Table 5.13).

Table 5.13 Circulatory Diseases Admission Rate per 100,000 Population at a National and County level (search tool updated 2019) *(Source: Public Health Well Community Profiles)*

Circulatory Diseases Admission Rate per 100,000 Population					
	2010	**2011**	**2013**	**2014**	**2015**
Meath County	4,230.8	4,020.6	4,657.2	4,621.5	3,741.1
Louth County	3,964.9	3,609.5	4,624.9	4,490.7	3,489.1
State	4,308.57	4,026.8	4,495.6	4,644.6	3,794.9

In terms of respiratory diseases, the rate of hospital admissions in counties Meath and Louth tends to fall broadly in line of that of the State (Table 5.14). The rates of admissions in Meath, Louth and the State have seen increased by 9.2%, 13.3% and 7.8% respectively since 2010.

Table 5.14 Respiratory Diseases Admission Rate per 100,000 Population at a National and County level (search tool updated 2019) *(Source: Public Health Well Community Profiles)*

Respiratory Diseases Admission Rate per 100,000 Population					
	2010	**2011**	**2013**	**2014**	**2015**
Meath County	2,310.1	2,305.7	2,748.5	2,764.5	2,696.6
Louth County	2,446.3	2,164.7	3,121.9	2,998.8	3,127.7
State	2402.62	2361.02	2633.6	2691	2,712.5

Mental Health

The rates of death by suicide and intentional self-harm in Meath are consistently lower than those in the State, while the rate is generally higher in Louth (Table 5.15). The rate of death by suicide and intentional self-harm are generally decreasing year-on-year in line with the pattern seen in the State.

Table 5.15 Death by Suicide and Intentional Self Harm Rate per 100,000 Population (updated October 2019) *(Source: CSO Statbank DHA12)*

Death by Suicide and Intentional Self Harm Rate per 100,000 Population				
	2010	**2011**	**2012**	**2013**
Meath County	5.52	7.58	9.60	5.86
Louth County	13.99	11.36	17.15	13.92
State	10.87	12.11	11.8	10.34

The number of admissions to hospital for anxiety or depression have followed a pattern of increasing in both Meath and Louth since 2013, which is in contrast to data for the State, which shows a decline and stabilising over the same period (Table 5.16).

Table 5.16 Number of admissions to hospital for anxiety or depression per 1,000 people (search tool updated 2019) (*Source: Public Health Well Community Profiles)*

Number of admissions to hospital for anxiety or depression per 1,000 people			
	2013	**2014**	**2015**
Meath County	1.7	2	6.7
Louth County	1.6	3	2.3
State	2	1.8	1.8

Lifestyle

In terms of lifestyle, populations in the Mid-East are broadly similar to those in the State, with rates of smoking, consumption of alcohol and prevalence of eating 5 portions or more fruit or vegetables daily being similar or identical across both comparative areas (Table 5.17).

Table 5.17 Prevalence of smoking, drinking alcohol and consumption of fruit and vegetables of persons aged 15 and over (updated November 2016) *(Source: CSO Statbank IH079)*

	Smoking daily (%)	Smoking occasionally (%)	Prevalence of drinking alcohol (%)	Prevalence of eating 5 portions or more fruit or vegetables daily (%)
Mid-East	18	8	81	43
State	15	7	81	42

Activity levels in the Mid-East are similar to those in the State, with the prevalence of individuals walking and cycling as a form of transport, as well as levels of participation in sports, fitness or recreational physical activities being on par in the Mid-East and the State (Table 5.18).

Table 5.18 All persons aged 15 and over by Region, Year and Physical Activity Undertaken (published November 2016) *(Source: CSO Statbank IH072)*

	Walk to get to and from places	Cycle to get to and from places	Sports, fitness or recreational physical activities	Muscle strengthening activities
Mid-East	85	13	55	35
State	86	14	49	34

Tourism

Drogheda is a medieval town noted for being in proximity to the Brú na Bóinne UNESCO World Heritage Sites in Co. Meath (c. 6.4km west of the site). Drogheda is tourist attraction in its own right, owing to its rich medieval history. Among the attractions in Drogheda are the Millmount Museum (c. 2.1km east of the Proposed Development site) and Highlanes Gallery (c. 2.4km northeast of the Proposed Development site).

While the site itself is located on the fringes of Drogheda town, attractions such as the Drogheda Retail Park (c. 140m south of the Proposed Development site), Funtasia Waterpark (c. 1.1km east of the Proposed Development site) and Aura Leisure Centre (c. 1km north-north-east of the Proposed Development site) are in proximity of the site, and serve as local tourist attractions.

5.6 SOCIAL INFRASTRUCTURE

Residential Dwellings

The site is currently greenfield, having not been previously developed. The subject site is located at the IDA Business and Technology Park at Donore Road, which lies to the east of the M1 motorway linking Dublin and Belfast, and on the western extremity of Drogheda. The wider landholding comprises a large primarily green-field site which is served by existing roads infrastructure implemented as part of the setting out of the IDA Business and Technology Park. The wider landholding is subject to an extant permission (MCC ref: LB/191735) for a data storage facility and ancillary development.

The site is located on the western fringe of the town of Drogheda, west of an area largely defined by commercial and residential developments. The nearest residential noise sensitive locations are located c. 200m east of the site, in the Cedarwood residential development. Areas of residential fabric define the eastern and north eastern aspects of the site, with residential areas located 200-300m along the eastern and

northern aspects of the site. Larger residential developments also exist north of the Proposed Development site, such as residential developments in Tredagh (c. 750m north of the Proposed Development site) and Riverbank (c. 330m north of the Proposed Development site). To the west-south-west of the site, one-off residential developments occurs in a ribbon pattern along the Donore Road.

Schools
There are a number of pre-, primary and secondary schools in the vicinity of the Proposed Development including:

- Scribbles & Giggles Pre School in Lagavooren, c. 1km southwest of the site;
- St. John's Junior National School in Rathmullan, c. 850m northeast of the site;
- St. Paul's Senior National School in Rathmullan, c. 990m northeast of the site, and;
- St. Oliver's Community College in Rathmullan, c. 1.2km north of the site.

The closest third level institution in the area is the Drogheda Institute of Further Education, located c. 2.9km northeast of the site.

Health
The nearest hospital to the site is the Beacon Drogheda Hospital located c. 70m south of the site. The Hilltop Medical Centric Health Centre is also located c. 1 km northeast of the site along the Rathmullan Road.

Security
There is a Garda station located on Father Connolly Way in Drogheda c. 1.9km northeast of the site and a fire station on Rathmullan Road in Drogheda (c. 1.2km northeast of the site).

5.7 IMPACTS OF THE PROPOSED DEVELOPMENT

The impact of construction, commissioning, operation and decommissioning of the Proposed Development are considered below.

5.7.1 Impacts on Businesses and Residences

The main potential impacts on local businesses and residences associated with the Proposed Development will be in relation to air quality, noise, visual impact and traffic. The potential impacts and mitigation measures to address them are dealt with within the corresponding chapters of this EIA Report as follows:

- Chapter 9 – Air Quality and Climate
- Chapter 10 – Noise and Vibration
- Chapter 12 – Landscape and Visual Impact
- Chapter 13 – Traffic and Transportation

It is predicted that there will be a very slight positive impact on local business activity during the construction phase with the increased presence of up to 30 no. construction workers using local facilities. The positive impact during the operational phase will be less with c. 2 staff on site at any given time for maintenance works.

There may be a short term slight negative impact on the local residential population during the construction phase and the operational phase (as described in section 5.7.3.1

below and Chapter 10 – Noise and Vibration). It is also anticipated that the Proposed Development will have indirect positive effects on employment in terms of construction material manufacture, maintenance contracts, equipment supply, landscaping etc. It is likely that the Proposed Development, during both the construction and operational phases, will have a negligible significance of effects on businesses and residences with respect to human health.

5.7.2 Impacts on Human Health from Air Quality

As outlined in Chapter 9 (Air Quality and Climate), National and European statutory bodies have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are based on the protection of the environment as well as the protection of human health. Additional factors such as natural background levels, environmental conditions and socio-economic factors are also considered in the limit values which are set (see Chapter 9, Table 9.1).

5.7.2.1 Construction Phase

As detailed in Chapter 9 (Air Quality & Climate), Best practice mitigation measures are proposed for the construction phase of the Proposed Development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the Proposed Development is likely to be ***short term*** and ***imperceptible*** with respect to human health.

5.7.2.2 Operational Phase

As detailed in Chapter 9 Air Quality & Climate, there are no predicted impacts to air quality or climate during the operational phase of the Proposed Development. Therefore, the operational phase is considered long term ***neutral and imperceptible***.

Air dispersion modelling was undertaken to assess the cumulative impact of the Proposed Development, permitted and future datacentre development with reference to EU ambient air quality standards which are based on the protection of human health. As demonstrated by the dispersion modelling results, emissions from the site, are compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant impact on human health. Conservative assumptions were made when determining the input data for the air modelling assessment and the approach used in the study leads to an over-estimation of the actual air emission levels that will arise. In relation to the spatial extent of air quality impacts from the site, ambient concentrations will decrease significantly with distance from the site boundary.

It is concluded that the Proposed Development, during both the construction and operational phases, will have a negligible significance of effects on air quality with respect to human health.

5.7.3 Impacts on Human Health from Noise & Vibration

Noise and vibration impacts associated with the Proposed Development have been fully considered within Chapter 10 of the EIA Report. Commentary on the impact assessment and related noise levels are summarised below with respect to potential environmental health impacts.

5.7.3.1 Construction Phase

As detailed in Chapter 10 (Noise and Vibration), During the construction phase of the Proposed Development there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic and other activities. The application of noise limits and hours of operation (i.e. as per Table 10.5, 10.6 and Section 10.2.4), along with implementation of appropriate noise and vibration control measures (as summarised in Section 10.6.1), will ensure that noise and vibration impact is kept to a minimum. Also, it is reiterated that any construction noise impacts will be ***slight, negative*** and ***temporary*** in nature.

5.7.3.2 Operational Phase

As detailed in Chapter 10, noise modelling was undertaken to assess the impact of the Proposed Development of the site with reference to noise limits typically applied by MCC and the EPA. As demonstrated by the modelling results, the predicted noise emissions associated with the Proposed Development of the site during the operational phases are compliant with the adopted noise limit values which are based with due consideration of the effect on human health. Furthermore, any change in noise levels associated with additional vehicles at road junctions in the vicinity of the Proposed Development is expected to be ***imperceptible***. In essence, the noise levels that are encountered at the nearest noise sensitive locations are predicted to be within relevant noise criteria that have been adopted here for the operation of the proposed data storage facilities and associated infrastructure. These criteria have been selected with due consideration to human health, therefore, will not result in a significant impact on human health

The cumulative noise impacts of the Proposed Development and the permitted data storage facility have been assessed in Chapter 10. The resultant noise impact is ***negative***, ***not significant*** and ***long-term***.

The Proposed Development will not generate any perceptible levels of vibration during operation and will have a negligible significance of effect with respect to human health. Therefore, there will be no impact from vibrations on human health.

5.7.4 Impacts on Local Amenities and Tourism

The location of the Proposed Development within an industrial park area, adjacent to a national motorway and in close proximity to developed retail parks will have a minimal impact on the local landscape amenity. There will be no impact on the local parks.

It is not anticipated that the Proposed Development will not have any impact on local tourism or shopping amenities.

The Proposed Development will not create any wastewater discharge which could have a potential impact on local amenities or the local population.

The scale and massing of the Proposed Development is modest relative to the Permitted Development, such that the Proposed Development will only give rise to a modest intensification, if any, of the landscape and visual effects, both during construction and in operation. It is noted that construction of the Proposed Development will take place within the overall construction programme for the wider Permitted Development, and will not therefore extend the overall construction period. Cumulative effects, in combination with the Permitted Development, will be ***not significant***. Further discussion is presented in Chapter 12 Landscape and Visual.

The Proposed Development will have a ***negligible*** significance of effect, and a ***long-term, neutral*** and ***imperceptible*** impact on local amenities and tourism with respect to human health.

5.7.5 Impacts from Additional Traffic

An assessment of the additional traffic movements and short-term diversions associated with the Proposed Development during the construction phase is presented in Chapter 13 Traffic and Transportation. Traffic accidents are considered in section 13.22. The available data indicates that there are no location-specific road safety concerns of relevance to the Proposed Development.

The predicted impact of the development on human beings and in particular road users will be ***short-term, negative*** and ***not significant*** for the construction phase and ***long-term, neutral*** and ***imperceptible*** for the operational phase.

5.7.6 Unplanned Events/Impacts on Health and Safety

The Proposed Development has been designed in accordance with the Safety, Health and Welfare at Work Act 2005 (S.I. 10 of 2005) as amended and the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. 299 of 2007) as amended and associated regulations. The plant has been designed by skilled personnel in accordance with internationally recognised standards, design codes, legislation, good practice and experience based on a number of similar existing facilities operated by the ESB Networks.

The Proposed Development has the potential for an impact on the health and safety of workers employed on the site, particularly during the construction phase. The activities of contractors during the construction phase will be carried out in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013) as amended to minimise the likelihood of any impacts on worker's health and safety.

During the operational phase of the Proposed Development, ESB Networks will implement an Environmental Safety and Health (EH&S) Management System and associated procedures. Full training in the EH&S Management System and relevant procedures will be provided to all employees.

The 2014 EIA Directive, 2018 EIA Regulations and associated EPA Draft EIA Report Guidelines 2017 require that the vulnerability of the project to major accidents and/or natural disasters (such as earthquakes, landslides, flooding, sea level rise etc.), as well as unplanned events, is considered in the EIA Report.

The site has been assessed in relation to the following external natural disasters; landslides, seismic activity, volcanic activity and sea level rise/flooding as outlined below. The potential for major accidents to occur at the facility has also been considered with reference to Seveso/Control of Major Accident Hazards (COMAH) Regulations.

There is a negligible risk of landslides occurring at the site and in the immediate vicinity due to the topography and soil profile of the site and surrounding areas. There is no history of seismic activity in the vicinity of the site. There are no active volcanoes in Ireland so there is no risk of volcanic activity.

The potential risk of flooding on the site was also assessed. A Stage 1 Flood Risk Assessment was carried out by AWN Consulting (Appendix 7.2) and it was concluded that the Proposed Development is not at risk of flooding. Furthermore, the Permitted Development included adequate attenuation capacity for run-off from the Proposed Development. to ensure there is no potential impact on flood risk for other neighbouring properties, nor is the site at risk from sea level rise.

The Proposed Development will not be a Seveso/COMAH facility. The only substance stored on site controlled under Seveso/COMAH will be one diesel storage tank (capacity 1000 L and located within a bund inside in the generator room) associated with the backup emergency generator which is well below the relevant thresholds of the Seveso Directive. The Proposed Development site is not located within the consultation distance of any COMAH establishment that is notified to the HSA.

There is a potential impact on the receiving environment as a result of minor accidents/leaks of fuel/oils during the construction and operational phases. However, the implementation of the mitigation measures set out in Chapter 6 (Land, Soils, Geology and Hydrogeology) and Chapter 7 (Hydrology) of the EIA Report will ensure the risk of a minor/accident is low and that the residual effect on the environment is imperceptible.

5.8 REMEDIAL AND MITIGATION MEASURES

The impacts on the local population are considered to be short-term, positive and imperceptible due to the expected short-term employment of a small number of construction workers directly employed to work on the construction of the transmission line and in turn creating a small amount of indirect additional business from using local businesses during the construction phase. The Proposed Development will provide a permanent power supply to the permitted data storge facility development and support future growth which will support employment in the area.

Mitigation measures proposed to minimise the potential effects on human health in terms of air quality and climate and noise and vibration during construction are discussed in the relevant sections of Chapters 9 and 10, respectively.

Chapter 13 Traffic and Transportation addresses mitigation measures which will be implemented to reduce the impact of additional traffic movements to and from the Proposed Development.

5.9 RESIDUAL IMPACTS

It is expected that the Proposed Development will have a ***positive*** and ***long-term*** effect on the immediate hinterland through facilitating the provision of adequate electricity supply that could potentially facilitate future employment opportunities.

A health and safety management plan will be in place to ensure the health and safety of all site personnel during construction. The experience of ESB Networks and the implementation of an EH&S Management System and relevant procedures will minimise any health and safety risks during operation of the Proposed Development.

5.10 CUMULATIVE IMPACT

A full assessment of cumulative impacts are considered in Chapter 16. The Proposed Development and permitted data storage facility development will create c.52 no. full-time permanent jobs, as well as creating short term employment in the area during the construction phase.

As demonstrated by the noise modelling results presented in Chapter 10 (Noise and Vibration), the predicted cumulative noise emissions during the operational phases are compliant with the adopted noise limit values which are based with due consideration of the effect on human health. The cumulative noise model considered the Proposed Development, the permitted data storage facility development and future indicative Masterplan development. Furthermore, any change in noise levels associated with additional vehicles at road junctions in the vicinity of the Proposed Development, permitted datacentre development and future indicative Masterplan development on the site is expected to be imperceptible. In essence, the noise levels that are encountered at the nearest noise sensitive locations are predicted to be within relevant noise criteria.

The cumulative impact of the Proposed Development with the permitted datacentre development and future indicative Masterplan development have been described in Chapter 9 (Air Quality and Climate). Air dispersion modelling was undertaken to assess the cumulative impact with reference to EU ambient air quality standards which are based on the protection of human health. As demonstrated by the dispersion modelling results, emissions from the site should the Proposed Development, permitted datacentre development and future indicative Masterplan development, assuming scheduled testing as well as emergency operation of the back-up generators, will be compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant effect on human health.

The Proposed Development has been designed to ensure there are no significant effects on human health when taking into account the surrounding land uses, once appropriate mitigation measures are put in place. As such it is anticipated that the Proposed Development will not have a significant effect on human health.

Apart from the adjacent data storage facility development, the permitted developments listed in Appendices 3.1, 3.2 and 3.3 of Chapter 3 generally refer to relatively small projects on existing facilities within the vicinity of the Proposed Development site which are considered to have a negligible impact on the local population. As the Proposed Development together with the data storage facility development will have a positive impact on the immediate hinterland and the Meath-Louth Region through continued expanding employment and the associated economic and social benefits, it is concluded that once appropriate mitigation measures are put in place any cumulative effects on population and human health will be ***positive*** and ***long-term*** and ranging from ***imperceptible*** to ***slight***.

Interactions are addressed in Chapter 17 of this EIA Report.

6.0 LAND, SOILS, GEOLOGY & HYDROGEOLOGY

6.1 INTRODUCTION

This chapter assesses and evaluates the potential impacts of the Proposed Development described in Chapter 2 (Description of the Proposed Development) on the land, soils, geological and hydrogeological environment. The impact on hydrology is addressed in Chapter 7.

6.2 METHODOLOGY

6.2.1 Guidelines

This assessment has been carried out generally in accordance with the following guidelines:

- EPA Draft EIA Report Guidelines 2017
- Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report, European Union 2017;
- Institute of Geologists of Ireland (IGI) '*Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements*' (2013); and
- National Roads Authority (NRA) '*Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes'* (2009).

The principal attributes (and impacts) to be assessed include the following:

- Geological heritage sites in the vicinity of the perimeter of the subject site;
- Landfills, industrial sites in the vicinity of the site and the potential risk of encountering contaminated ground;
- The quality, drainage characteristics and range of agricultural uses of soil around the site;
- Quarries or mines in the vicinity, the potential implications (if any) for existing activities and extractable reserves;
- The extent of topsoil and subsoil cover and the potential use of this material on site as well as requirement to remove it off-site as waste for recovery or disposal;
- High-yielding water supply springs/wells in the vicinity of the site to within a 2km radius and the potential for increased risk presented by the Proposed Development;
- Classification (regionally important, locally important etc.) and extent of aquifers underlying the site perimeter area and increased risks presented to them by the Proposed Development associated with aspects such as for example removal of subsoil cover, removal of aquifer (in whole or part), drawdown in water levels, alteration in established flow regimes, change in groundwater quality;
- Natural hydrogeological/ karst features in the area and potential for increased risk presented by the activities at the site;
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally; and
- Vulnerability of the Proposed Development to major disasters from a geological and hydrogeological standpoint such as landslides and seismic activity.

6.2.2 Sources of Information

Desk-based geological and hydrogeological information on the substrata underlying the extent of the site and surrounding areas was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland (GSI) - online mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- Teagasc soil and subsoil database;
- Ordnance Survey Ireland - aerial photographs and historical mapping;
- Environmental Protection Agency (EPA) – website mapping and database information;
- National Parks and Wildlife Services (NPWS) – Protected Site Register;
- Meath & Louth County Council(s) - illegal landfill information;
- Research papers referred to in this chapter.

Site specific data was derived from the following sources:

- Site Investigation Report (IGSL; 2020)

6.3 RECEIVING ENVIRONMENT

The receiving environment is discussed in terms of; geology, soils, hydrogeology and site history including potential for contamination.

The subject site is located at the Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath (refer to Chapter 1 Figure 1.1).

6.3.1 Setting

The site of the Proposed Development was previously used for agriculture purposes with no indication from historical mapping that the site had any other uses (OSI, 2020). Much of the surrounding land to the east has been developed in the past 10-15 years for industrial and residential use. The M1 motorway is located directly to the west of the proposed site. The site to the south is currently under development for a data storage facility development.

6.3.2 Areas of Geological Interest & Historic Land-Use

The GSI (2020) on-line mapping was reviewed to identify sites of geological heritage for the site and surrounding area. There are no recorded sites on/ at the Proposed Development site, or which could be considered suitable for protection under this programme or recorded in the Louth County Development Plan 2015-2021 or the Meath County Development Plan 2013-2019.

The nearest geological heritage site is the Boyne Valley, which is located approximately 1.7 km to the north of the site.

Details of the site history and previous land use are included in Chapter 12 Archaeology, Architectural and Cultural Heritage. The assessment of site history (OSI, 2020) confirms that the site has been in agricultural use since the earliest mapping available (1837-1842).

According to the EPA (2020) there are no licensed IPPC facilities in the vicinity of the site however two IPPC facilities are located in the wider study area. These are referred to as Irish Cement Ltd (Platin) (P00030-05) and Superwarm Homes Ltd.

(P0368-01) situated at approx. 2.2 km to the south and 3.2 km to the northeast of the site, respectively.

Also, according to the EPA, there are no licensed waste facilities in the immediate vicinity of the site. However, two waste facilities are located in the wider study area. These are referred to as Roadstone Limited (W0278-01) and Drogheda Landfill (W033-01) situated at approx. 1.9 km to the southwest and 2.6 km to the north of the site, respectively. The Indaver waste to energy facility is located 2.2 km to the west of the site (WO167-03). Previous consultation with Louth County Council (LCC) and Meath County Council (MCC) confirmed that there are no known Section 22 illegal landfills or other historic landfills within 1 km of the site (AWN telephone communication September 2019).

6.3.3 Regional Soils

Teagasc online soil mapping categorises the shallow soil at the proposed site as AminPD – Poorly drained mineral material which is mostly acidic in makeup. Figure 6.1 shows the regional soil coverage in the area of the Proposed Development site.

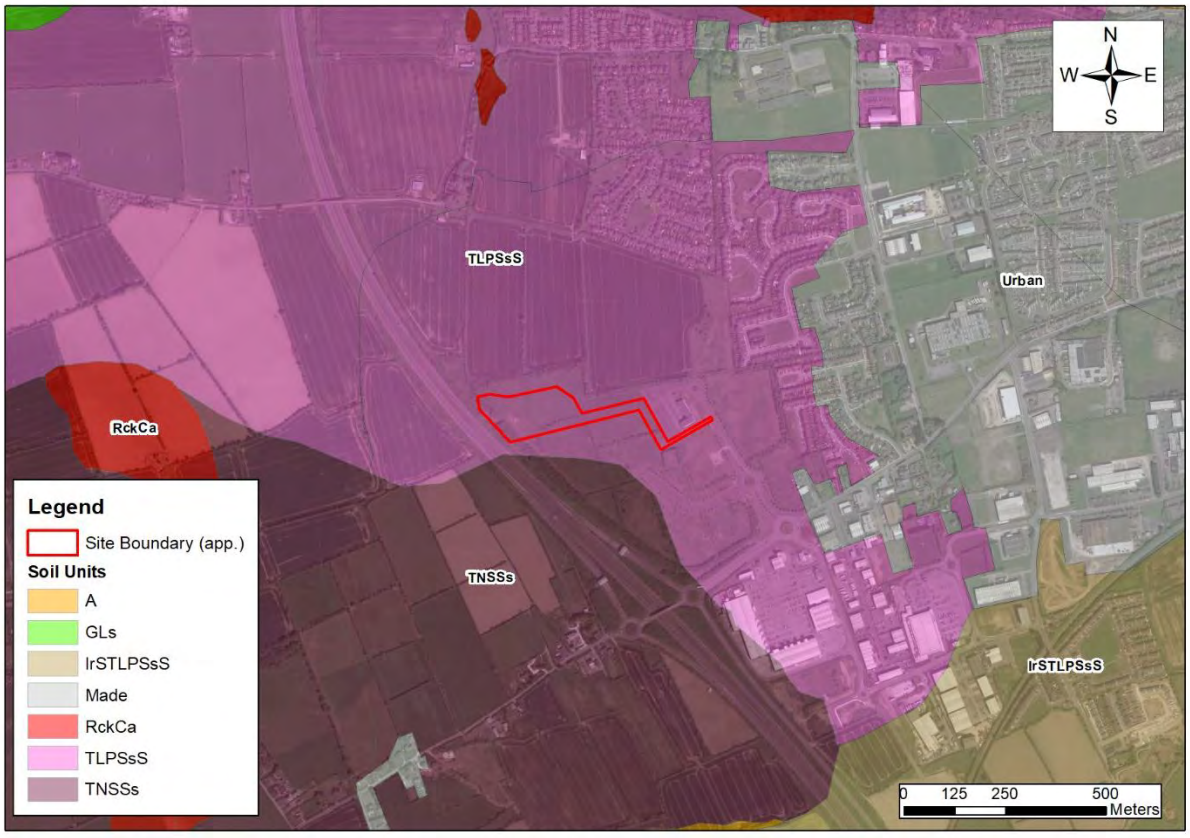

Figure 6.1 Soils map for the Proposed Development site (boundary indicated in red) (GSI, 2019)

The Quaternary geological period extends from about 1.5 million years ago to the present day and can be sub-divided into the Pleistocene Epoch, which covers the Ice Age period and which extended up to 10,000 years ago, and the Holocene Epoch, which extends from that time to the present day.

The GSI/Teagasc subsoil mapping database of the quaternary sediments in the area of the subject site indicates two principal soil types, as shown in Figure 6.2 below. These comprise the following:

- Sandstone and shale till (Lower Paleozoic) (TLPSsS): This is the predominant soil type located in the study area. It is a clayey till type (diamictons).
- Shales and sandstones till (Namurian) (TNSSs). There is an area located in southwest of the study identified as TNSSs.

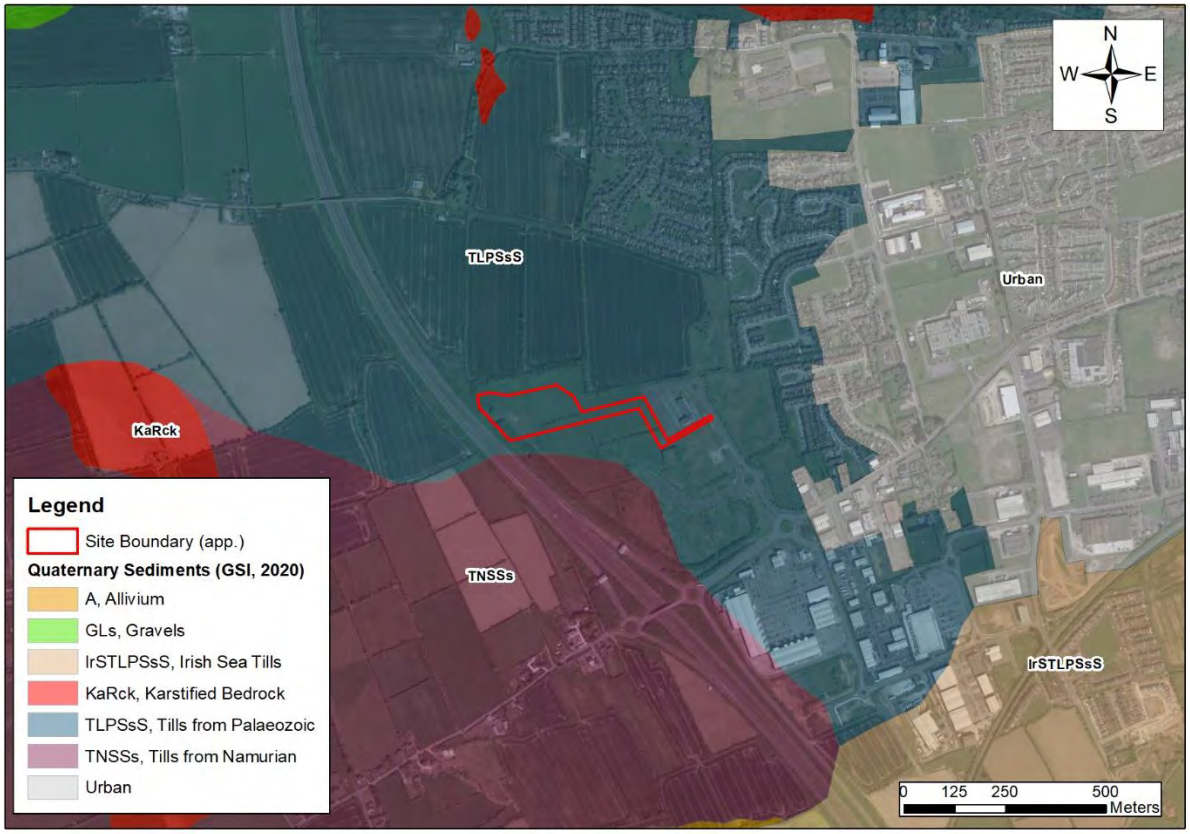

Figure 6.2 Soils map for the Proposed Development site (boundary indicated in red) (GSI, 2019)

Made Ground (Made) is also present to the east of the Proposed Development site (Figure 6.2 GSI Data), which reflects the urban land use in the wider area. There is no available data on the site-specific ground conditions at the site with regard to superficial geology.

The exact depth to bedrock at the site is not known as bedrock was not encountered to 15 m below land surface in boreholes drilled at the site (IGSL, 2020). Subsoil permeability in the study area is categorised as “Low” by the GSI. Borehole logs from the 2020 onsite investigation are included in Appendix 6.2.

6.3.4 Regional Geology

Inspection of the available GSI (2020) records (Data Sheet No. 16 and on-line mapping) shows that the bedrock geology at the site and the surrounding area is dominated by rocks from the Late Arundian-Asbian age. The site is located over Dinantian Carboniferous Limestone while the specific rock unit is the Platin Formation (Rock Unit code: CDPLTN) which is described as Crinoidal peloidal grainstone-packstone (see Figure 6.3 below).

No bedrock outcrops have been identified at or in the vicinity of the proposed site.

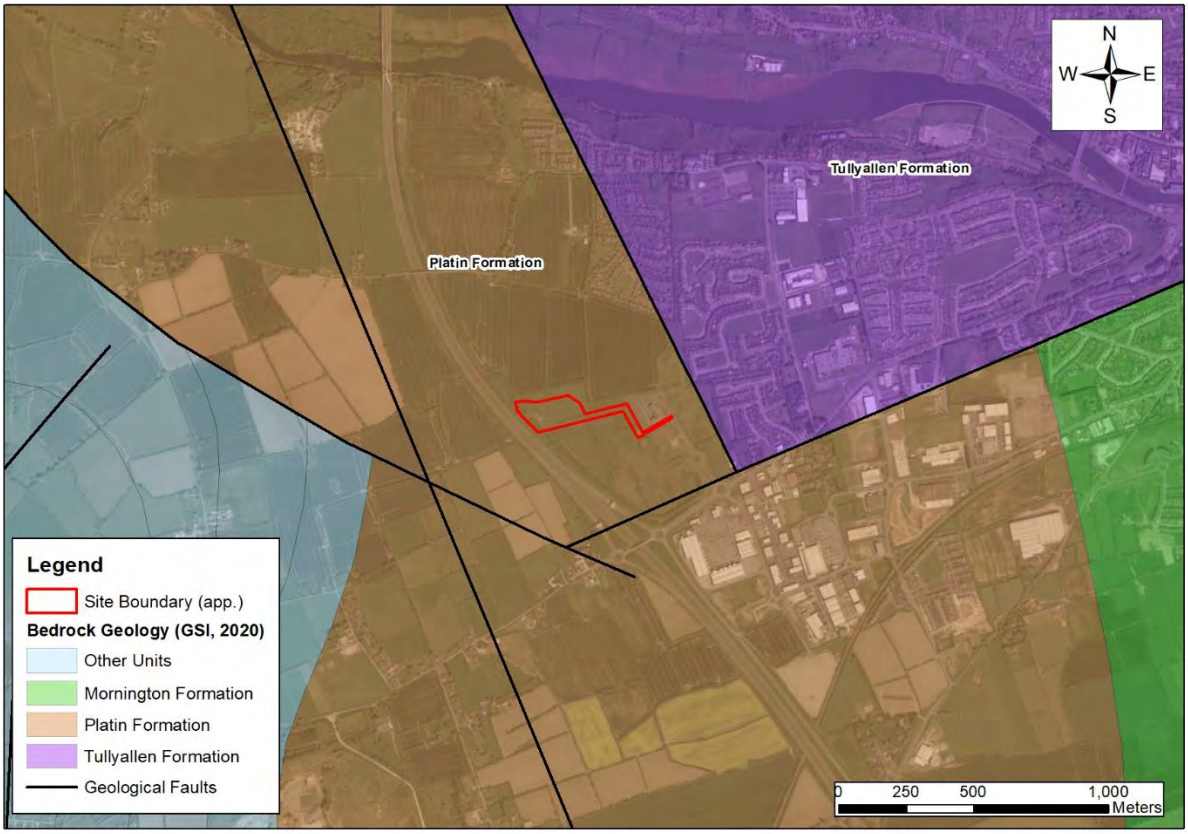

Figure 6.3 Bedrock geology map (boundary indicated in red) (GSI, 2019)

In terms of the structural relationship of the area, the GSI (2020) bedrock geology map (100K structural database) shows some fault lines to the south and east of the subject site.

6.3.5 Regional Hydrogeology

6.3.5.1 Description of the Groundwater Body

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km^2), well yield (m^3/d), specific capacity ($m^3/d/m$) and groundwater throughput (mm^3/d). There are three main classifications: regionally important, locally important and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (Ll). Similarly, poor aquifers are classed as either generally unproductive except for local zones (Pl) or generally unproductive (Pu).

The bedrock aquifers underlying the Proposed Development site according to the GSI National Draft Bedrock Aquifer Map are classified as Rkd – a Regionally Important Aquifer which is described as karstified (diffuse). RKd aquifers are those in which flow is more diffuse, storage is higher, there are many high yielding wells, and development of bored wells is less difficult. These areas also have caves and large springs, but the springs have a more regular flow.

Figure 6.4 Aquifer Classification map (*Source: GSI) www.gsi.ieGSIA*)

Figure 6.4 presents the current bedrock aquifer map for the Proposed Development area.

Aquifer vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated generally by human activities. Due to the nature of the flow of groundwater through bedrock in Ireland, which is almost completely through fissures/ fractures, the main feature that protects groundwater from contamination, and therefore the most important feature in the protection of groundwater, is the subsoil (which can consist solely of or of mixtures of peat, sand, gravel, glacial till, clays or silts).

The GSI currently classifies the aquifer vulnerability in the region of the Proposed Development as 'Low' (L) which indicates an overburden depth of >10 m (refer to Figure 6.5). Based on onsite investigations (Appendix 6.2) overburden depth to bedrock has been shown to be > 15 mbgl which would confirm the GSI site categorisation of "Low". Based on GSI mapping overburden depth thins to the west.

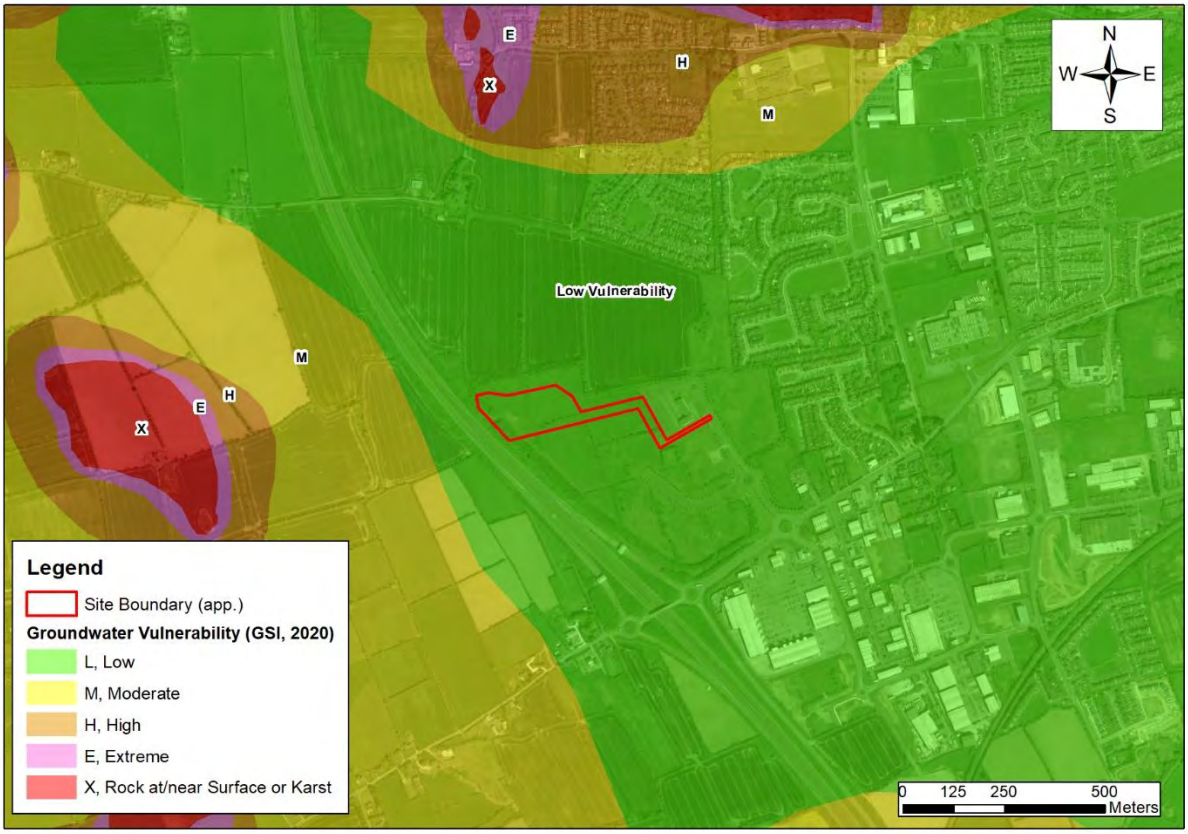

Figure 6.5 Aquifer Vulnerability map (*Source: www.gsi.ie*)

6.3.5.2 Groundwater Wells and Flow Direction

The Kiltrough Public Water Scheme outer protection area (SO) borders the site to the south, the Kiltrough production well itself is 4.5 km to the south east of the proposed site.

The GSI Well Card Index is a record of wells drilled in Ireland, water supply and site investigation boreholes. It is noted that this record is not comprehensive as licensing of wells is not currently a requirement in the Republic of Ireland. This current index, however, shows a number of groundwater monitoring and abstraction wells within a 2 km radius of the site; the abstraction wells generally supply a mix of use ranging from domestic to public to industrial use. These wells are generally located in the Limestone bedrock with recorded yields ranging between ca. 21.8 m^3/d to 1140 m^3/d (spring).

Figure 6.6 below presents the GSI well search for the area surrounding the site (Note this source does not include all wells) and Table 6.2 below summarises the details of some of the wells present within this search area.

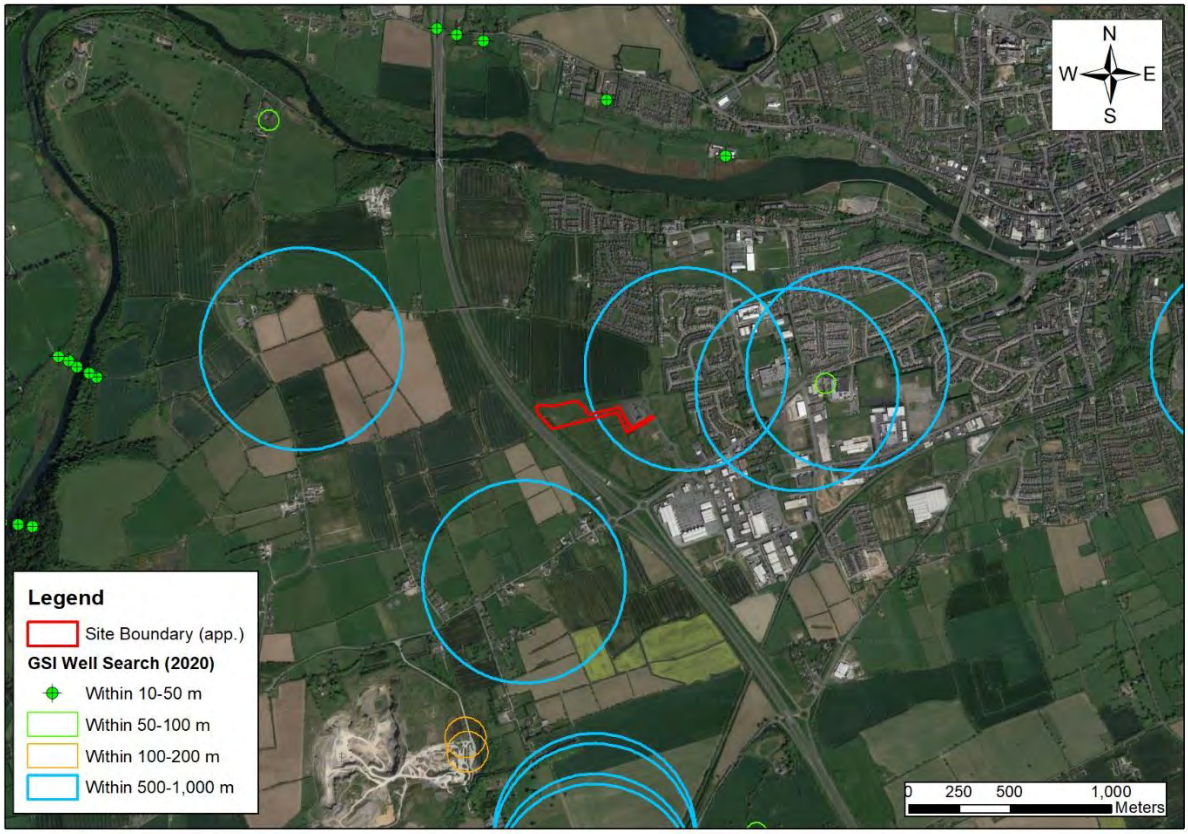

Figure 6.6 GSI Well Search (*GSI, 2020*)

There are two wells listed for domestic use in the Rathmullan area close to the Proposed Development site. The closer of the two shown in Table 6.2 below W012 does not have any install data or yield information available. The second well (W005) is listed as being drilled in 1969, due to the availability of mains water in the area it would be likely that both these wells are not currently in use as they are present in a residential area and may have been installed before the urbanisation of wider Rathmullan area.

There is no continuous water table in the clayey overburden. Flows of this nature are typical of low permeability clay strata with intermittent fill areas, where often the water level measures represent pore water seepages. As such , there is no potential for impact on the local or regional groundwater flow regime as a result of the Proposed Development.

Table 6.2 GSI Well Index Table from well search (GSI, 2020)

GSI Name	TYPE	Depth to Bedrock	Townland	County	Use	Yield Class	Yield m^3/d
2927SEW066	Borehole	18.3	MELL	Louth	Industrial use	Good	200
2927SEW081	Spring		MELL	Louth		Intermediate Spring	1140
2927SEW101	Dug well	10.4	OLDBRIDGE	Meath			
2927SEW102	Dug well	1.1	OLDBRIDGE	Meath			
2927SEW103	Dug well		DOWTH	Meath			
2927SEW104	Dug well		DOWTH	Meath			
2927SEW105	Dug well	1.1	DOWTH	Meath			
2927SEW106	Dug well		OLDBRIDGE	Meath			
2927SEW107	Dug well	9.8	OLDBRIDGE	Meath			
2927SEW108	Dug well	5.1	DOWTH	Meath			
2927SEW109	Dug well	1.8	DOWTH	Meath			
2927SEW012	Borehole	16.5	RATHMULLE	Meath	Domestic use only		
2927SEW035	Borehole		PLATIN	Meath			
2927SEW036	Borehole	9.1	PLATIN	Meath	Public supply (Co Co)	Moderate	54.5
2927SEW038	Borehole	15.2	PLATIN	Meath	Industrial use	Excellent	872.7
2927SEW039	Borehole	11.3	PLATIN	Meath	Industrial use	Good	164
2927SEW041	Borehole		DROGHEDA	Meath		Poor	28
2927SEW042	Borehole		DROGHEDA	Meath		Failure	
2927SEW043	Dug well		DROGHEDA	Meath		Poor	28
2927SEW045	Borehole	4.9	SHEEPHOUS	Meath		Moderate	81.8
2827SEW111	Borehole	0	DONORE	Meath	Agri & domestic use	Excellent	1091
2927SEW003	Dug well		DONORE	Meath			
2927SEW110	Borehole	0	DONORE	Meath	Agri & domestic use	Poor	21.8
2927SEW001	Dug well		BEYMORE	Meath			
2927SEW002	Dug well		OLDBRIDGE	Meath			
2927SEW005	Borehole	19.8	RATHMULLE	Meath		Moderate	55

Regional groundwater flow is known to be in a south - north direction towards the River Boyne.

6.3.5.3 Groundwater Quality

The European Communities Directive 2000/60/EC established a framework for community action in the field of water policy (commonly known as the Water Framework Directive [WFD]). The WFD required '*Good Water Status'* for all European water by 2015, to be achieved through a system of river basin management planning and extensive monitoring. 'Good status' means both *'Good Ecological Status'* and *'Good Chemical Status'*.

The Groundwater Body (GWB) underlying the site is the Drogheda GWB (EU Groundwater Body Code: IE_EA_G_008). Currently, the EPA (2019) classifies the Drogheda GWB as *under review* meaning there is insufficient information to determine the risk, or measures for enhancement have been implemented but some additional monitoring is required to confirm expected improvements have been achieved. However, the GWBs to the north and south of this currently are projected as "At Risk" i.e. at risk of not achieving good status. Figures 6.7 below present the most recent data from the EPA website. The Drogheda GWB previously had a "Good" status for the period 2013-2018.

Figure 6.7 GWB WFD Status (period 2013-2018). Green = Good Status (EPA, 2019) (site location marked with a red cross)

6.3.5.4 Hydrogeological Features

According to the GSI Karst database there are a number of karst features (bedrock prone to dissolution leading to underground drainage systems such as caves and large crevices) in the wider area surrounding the proposed site (see Figure 6.3).

6.3.5.5 Areas of Conservation

There are no Special Protection Areas, candidate Special Areas of Conservation or proposed Natural Heritage Areas within or immediately adjacent to the facility. The nearest site of conservation is the Boyne River Islands pNHA ~1.7 km north east of the site. The River Boyne and River Blackwater SAC is located c. 0.98 km to the north of the Proposed Development site. There is no direct hydrological link with these receptors. Refer to Chapter 8 Biodiversity for further details.

6.3.5.6 Cross Sections

Figure 6.8 present the location of representative cross sections through the site to show the local hydrogeology conceptual site model (CSM) which is as follows:

- Site specific information from a 2020 geotechnical investigation (IGSL, 2020) shows the overburden comprises low permeability sandy gravelly CLAY. This clay is underlain by karstified crinoidal peloidal grainstone-packstone bedrock. Little to no bedrock outcropping has been noted in the immediate area. Generally, depth to bedrock is >15 mbgl. As such the underlying aquifer is well protected from any surface spills (Aquifer vulnerability classed as Low following GSI/EPA classification.
- The underlying aquifer is a Regionally Important (RKd) aquifer and evidence of karstification are noted in the surrounding area.
- The Kiltrough Public Water Scheme outer protection area (SO) borders the site to the south but the zone of contribution does not extend into the site. As

such there is no potential that the Proposed Development could have an impact on this water supply. The Kiltrough production well itself is >4.5 km to the south east of the proposed site.

- Review of the geology and hydrogeology in the surrounding region indicates that there are no sensitive receptors such as groundwater-fed wetlands or geological heritage sites within the immediate vicinity which could be impacted by the Proposed Development.
- Regional groundwater flows are in a northerly direction towards the Boyne; however, the potential for any impact on the baseflow in the Boyne as a result of the Proposed Development is low based on the absence of any abstraction from the aquifer and the thickness and low permeability nature of the soils on the site.

6.3.5.7 Soil Quality

Appendix 6.2 includes soil quality results for 10 representative soil samples. The suite of parameters considered for the soil analysis is as follows:

- Metals, PAH, TPH, BTEX, PCB; general psycho-chemicals parameters;
- CEN 10:1: Metals, general psycho-chemicals parameters;
- WAC analysis;

There are no legislated threshold values for soils in Ireland. As such soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and also ecology for a commercial/industrial end use. (LQM/CIEH S4Uls GACs). Comparison of the soil results with these GACs do not show any exceedances which would indicate contamination or risk to ecology or human health.

The soil analysis results were also compared to the landfill acceptance criteria as specified in the European Communities (EC) Council Decision 2003/33/EC which identifies the maximum concentration of selected key contaminants permitted for acceptance at authorised waste facilities. The WAC criterion sets threshold concentrations for contaminants to classify the material under three categories; inert, non-hazardous and hazardous. No soils analysed showed exceedance of inert WAC threshold.

Material that exceeds the inert WAC threshold may only be disposed of at a non-hazardous or hazardous landfill, as appropriate. Material which exceeds the non-hazardous WAC threshold must be disposed of as hazardous waste.

Although the WAC analysis is a useful tool in terms of classifying the material, insofar as is possible, as suitable for acceptance at inert, non-hazardous or hazardous waste landfills, the material would further need to be classified as Hazardous or Non-Hazardous in accordance with the EPA Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous procedure or by using the HazWasteOnline (or similar approved methodology) tool.

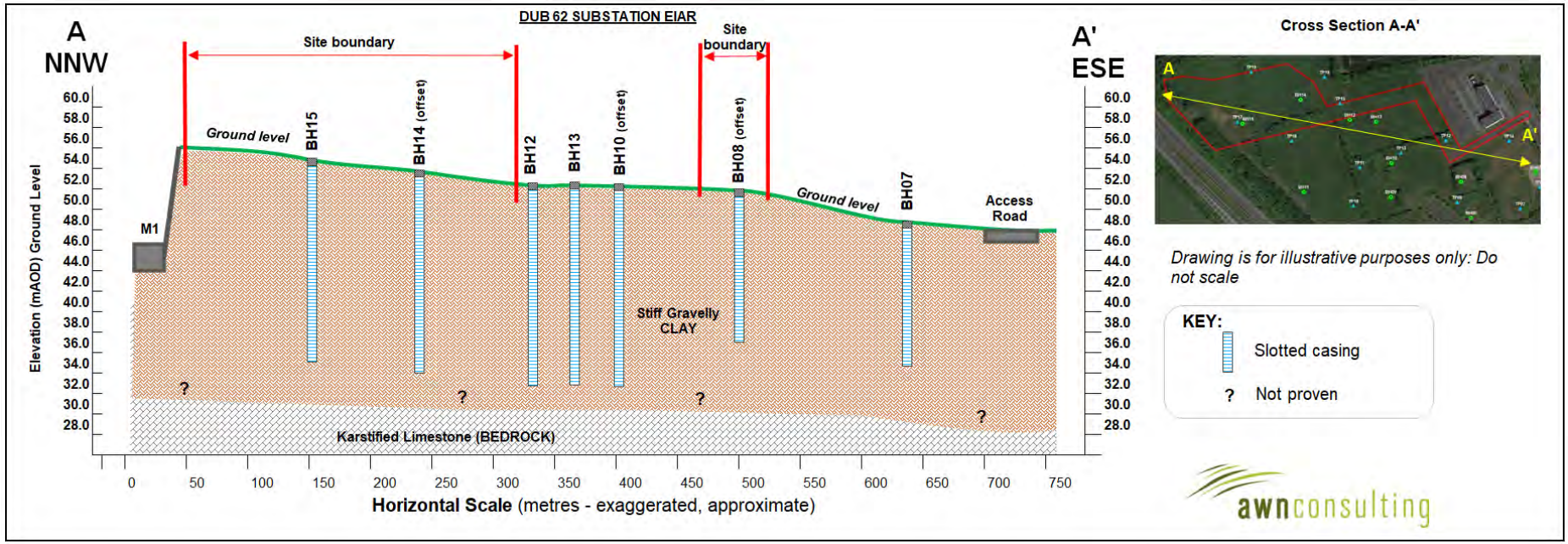

Figure 6.8 A-A' cross section

6.3.5.8 Rating of site importance of the geological and hydrogeological features

Based on the NRA methodology (refer Appendix 6.1), the criteria for rating site importance of hydrogeological features, the importance of the hydrogeological features at this site is rated as ***high importance***. This is based on the assessment that the attribute has a high-quality significance or value on a local scale. The aquifer underlying the proposed site is a karstified regionally important bedrock aquifer, used for public water supply or generally for potable use.

6.3.6 Economic Geology

The EPA Extractive Industry Register and the GSI mineral database were consulted in December 2019 to determine whether there were/ are any mineral sites close to the subject site. There are no active quarries located in the immediate vicinity with the nearest notable quarry located approximately 1.1 km to the southwest which is referred to as the Platin Quarry and significant dewatering of the aquifer is required for this quarry development. There will be no impact to mineral resources in the area as a result of the Proposed Development

6.3.7 Radon

According to the EPA (now incorporating the Radiological Protection Institute of Ireland) the site location in Cruiserath is a Very Low Radon Area where is it estimated that between 1% - 5% of dwellings will exceed the Reference Level of 200 Bq/m^3. This is the second lowest of the five radon categories which are assessed by the EPA.

6.3.8 Geohazards

Much of the Earth's surface is covered by unconsolidated sediments which can be especially prone to instability. Water often plays a key role in lubricating slope failure. Instability is often significantly increased by man's activities in building houses, roads, drainage and agricultural changes. Landslides, mud flows, bog bursts (in Ireland) and debris flows are a result. In general, Ireland suffers few landslides. Landslides are more common in unconsolidated material than in bedrock, and where the sea constantly erodes the material at the base of a cliff and leads to recession of the cliffs. Landslides have also occurred in Ireland in recent years in upland peat areas due to disturbance of peat associated with construction activities. There have been no recorded landslide events at the site. The GSI landslide database was consulted and the nearest landslide to the Proposed Development was 2.2 km to the west, the date and exact details were not available on GSI online database. There have been no recorded landslide events at the site. Due to the local topography and the underlying strata there is a negligible risk of a landslide event occurring at the site.

In Ireland, seismic activity is recorded by the Irish National Seismic Network operated by the Geophysics Section of the School of Cosmic Physics at the Dublin Institute for Advanced Studies (DIAS) which has been recording seismic events in Ireland since 1978. The station configuration has varied over the years. However, currently there are five permanent broadband seismic recording stations in Ireland operated by DIAS. The seismic data from the stations comes into DIAS in real-time and is studied for local and regional events. Records since 1980 show that the nearest seismic activity to the proposed location was in the Irish Sea (1.0 – 2.0 M_l magnitude) and ~80 km to the south in the Wicklow Mountains. There is a very low risk of seismic activity on the Proposed Development site. Therefore, there are no potential effects from geohazards.

There are no active volcanoes in Ireland so there is no risk from volcanic activity.

6.3.9 Land Take

There will be a loss of undeveloped land due to the Proposed Development however the land is within a holding currently owned and operated by the Industrial Development Authority (IDA) of Ireland as a business and industrial park. The site is also zoned to provide for high technology uses subject to the provision of necessary physical infrastructure. Zoning forms part of the County development planning process. This zoning is based on the considered needs for the County and local area. As such, the site was due for development resulting in no long term overall loss of agricultural land.

6.3.10 Summary & Type of Geological/Hydrogeological Environment

Based on the regional and site-specific information available the type of Geological/ Hydrogeological Environment as per the IGI Guidelines is:

Type B – Naturally Dynamic Hydrogeological Environment.

A summary of the site geology and hydrogeology is outlined thus:

- The Proposed Development site has been greenfield/agricultural use historically. There is no evidence of any historical waste disposal or source of contamination.
- The site is underlain by a Regionally Important karstfied aquifer.
- The site is underlain by the Platin formation comprising crinoidal peloidal grainstone-packstone.

6.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

A detailed description of the Proposed Development is provided in Chapter 2 of this EIA Report. The activities associated with the Proposed Development which are relevant to the land, soils, geology and hydrogeological environment are detailed in Table 6.3.

Table 6.3 Site Activities Summary

Phase	Activity	Description
Construction	Earthworks: Excavation of Superficial Deposits & Importation of Fill	Cut and fill will be required to facilitate construction of the facility and associated ancillary services. There will be no excavation of bedrock required as part of the Proposed Development Subsoil stripping and localised stockpiling of soil will be required during construction. The importation of fill will be required to facilitate construction. The project engineers, CSEA, have estimated that the importation of up to 4800m^3 of fill material and exportation of 17000 m^3 will be required.
	Storage of hazardous Material	Bulk fuel will be stored on site within bunding in the contractor's compound.
Operation	Increase in hard standing area	Altering of local recharge due to increase in hard standing area to 6,684m^2 from 4,658m^2
	Storage of hazardous Material	No significant bulk fuel or chemical storage is required for operation. There is a requirement for oil storage for the transformers. The maximum storage is c. 36 m^3 and this will be stored within a bunded area which is greater than 110% of the storage capacity. A float switch will operate to ensure that any collected water is pumped to sewer. The oil tank (1 m^3) for the backup generator is located within a bund and located within the generator room.

As outlined in Table 6.3, the activities required for the construction phase of the Proposed Development represents the greatest risk of potential impact on the geological environment. These activities primarily pertain to the site preparation, excavation, levelling and infilling activities required to facilitate construction of Proposed Development and ancillary services.

6.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

The potential geological and hydrogeological impacts during the construction and operations are presented below. Remediation and mitigation measures included in the design of this project to address these potential impacts are presented in section 6.6.

6.5.1 Construction Phase

The following potential effects to land soil and groundwater have been considered:

- Excavated and stripped soil can be disturbed and eroded by site vehicles during the construction. Rainfall and wind can also impact on non-vegetated/uncovered areas within the excavation or where soil is stockpiled. This can lead to run-off with high suspended solid content which can impact on water bodies. The potential risk from this indirect impact to water bodies and/or habitats from contaminated water would depend on the magnitude and duration of any water quality impact.
- Due to the lack of development at the site and the historical agricultural use the risk of contaminated soils being present onsite is low. Nonetheless material, which is exported from site, if not correctly managed or handled, could impact negatively on human beings (onsite and offsite) as well as water and soil environments.
- As with all construction projects there is potential for water (rainfall and/or groundwater) to become contaminated with pollutants associated with construction activity. Contaminated water which arises from construction sites can pose a significant short-term risk to groundwater quality for the duration

of the construction if contaminated water is allowed percolate to the aquifer. The potential main contaminants include:

- Suspended solids (muddy water with increase turbidity) – arising from excavation and ground disturbance;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons (ecotoxic) – accidental spillages from construction plant or onsite storage;
- Wastewater (nutrient and microbial rich) – arising from poor on-site toilets and washrooms.

Loss of agricultural land

There will be a local loss of greenfield area however, the area of development is small in the context of the overall agricultural land available in the region and has been zoned for high technology development. There will be no impact to mineral resources in the area as a result of the Proposed Development

These potential impacts are not anticipated to occur following the implementation of mitigation measures outlined in section 6.6.1.

6.5.2 Operational Phase

The following risks have been considered in relation to the operational phase of the Proposed Development:

- During the operational phase there is a small potential for leaks from the minor fuel storage for transformers to occur on site. In addition to this there is a potential for leaks and spillages from the small number of vehicles which enter this area. Any accidental emissions of oil, petrol or diesel could cause soil/groundwater contamination if the emissions are unmitigated.
- In the event of a fire at the facility, firewater will also need to be contained or it may contaminate soil/groundwater.

These potential impacts are not anticipated to occur following the implementation of mitigation measures outlined in section 6.6.2.

6.5.3 Do Nothing Scenario

Should the Proposed Development not take place the land, soils, geological and hydrogeological environment would not be subject to changes with no soil removal or hardstand cover. The site would remain greenfield, until such time as a similar or alternative development consistent with the land use zoning is granted permission and constructed.

6.6 REMEDIAL AND MITIGATION MEASURES

This section describes a range of mitigation measures designed to avoid or reduce any potential adverse geological and hydrogeological impacts identified.

6.6.1 Construction Phase

In order to reduce impacts on the soils and geology environment a number of mitigation measures will be adopted as part of the construction works on site. The measures will address the main activities of potential impact which include:

- Control of soil excavation and export from site;

- Sources of fill and aggregates for the Proposed Development;
- Fuel and chemical handling, transport and storage; and
- Control of water during construction.

Construction Environment Management Plan
In advance of work starting on site the works Contractor will author a Construction Methodology document taking into account their approach and any additional requirements of the Design Team or Planning Regulator.

An outline Construction Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included with the planning documentation. It is proposed that a detailed CEMP will be prepared and maintained by the appointed contractors during the construction phase of the proposed project to minimise the impact of all aspects of the construction works on the local environment. The CEMP will include emergency response procedures in the event of a spill, leak, fire or other environmental incident related to construction.

Control of Soil Excavation
Subsoil will be excavated to facilitate the construction of foundations, access roads, car parking areas, expansion of drainage connections and other ancillary works. The Proposed Development will incorporate the reduction, reuse and recycle approach in terms of soil excavations on site. The construction will be carefully planned to ensure only material required to be excavated will be with as much material left in situ as possible. Excavation arising will be reused on site where possible however it is envisioned that c. 17000 m^3 will be exported from site.

It is unlikely any contaminated material will be encountered during construction of the Proposed Development based on previous use of the site and soil quality analysis. Nonetheless, any excavation works will be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated from clean/inert soil. In the unlikely event that any potentially contaminated soils are encountered, they should be tested and classified as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication, HazWasteOnline tool or similar approved method. The material will then need to be classified as inert, non-hazardous, stable non-reactive hazardous or hazardous in accordance with *EC Decision 2003/33/EC*. It should then be removed from site by a suitably permitted waste contractor to an authorised waste facility.

Stockpiles have the potential to cause negative impacts on air and water quality. The effects of soil stripping and stockpiling will be mitigated against through the implementation of an appropriate earthworks handling protocol during construction. It is anticipated that any stockpiles will be formed within the boundary of the site and there will be no direct link or pathway from this area to any surface water body.

Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping, and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads.

Export of Material from Site
Suitable topsoil and subsoil will be reused on site as backfill, where possible. However, it is currently envisaged that c. 17,000m^3 will require removal offsite (as advised by the project engineers, CSEA).

The importation of fill materials will be required for construction of foundations and to reinstate the trenches. The project engineers, CSEA, have estimated that the importation of up to 4800m^3 of fill material will be required.

The surplus excavated material will be removed off-site either as a waste or, where appropriate, as a by-product. Where the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. A formal documented EPA approval will be obtained before re-using the material as a by-product.

If any of the material is deemed to be a waste, removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with the *Waste Management Act 1996* (as amended), the *Waste Management (Collection Permit) Regulations 2007* (as amended) and the *Waste Management (Facility Permit & Registration) Regulations 2007* (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration (COR), permit or licence is required by the receiving facility.

Refer to Chapter 15 Waste Management for further relevant information.

Sources of Fill and Aggregates

All fill and aggregate for the Proposed Development will be sourced from reputable suppliers. All suppliers will be vetted for:

- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development;
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company.

It is anticipated that approximately 4800m^3 engineered fill will be required to facilitate construction. There will be no impact to mineral resources in the area as a result of the Proposed Development

Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages to ground of fuels and prevent any resulting soil and/or groundwater quality impacts:

- Designation of a bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers to carry a spill kit
    - Operatives must have spill response training; and
    - Drip trays used on any required mobile fuel units.

In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;

- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they will be secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

The aforementioned list of measures is non-exhaustive and will be included in the CEMP.

Control of Water During Construction
Run-off from excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Earthwork operations will be carried out such that surfaces, as they are being raised, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing. Correct management will ensure that there will be minimal inflow of shallow/perched groundwater into any excavation. Due to the very low permeability of the overburden and the relative shallow nature for foundation excavations, infiltration to the underlying aquifer is not anticipated.

Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering into any water courses/ drainage ditches.

Should any discharge of construction water be required during the construction phase, discharge will be to sewer. Pre-treatment and silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks/ponds) and hydrocarbon interceptors. Active treatment systems such as Siltbusters or similar may be required depending on turbidity levels and discharge limits.

6.6.2 Operational Phase

During the operational phase of the Proposed Development site there is limited potential for site activities to impact on the geological and hydrogeological environment of the area. There will be no emissions to ground or the underlying aquifer from operational activities. There will be no impact on local or regional groundwater resources (abstraction) as a result of the Proposed Development.

Environmental Procedures
As detailed in Section 2.5.2 in Chapter 2, the operator implements an Environmental Safety and Health Management Programme at each of its facilities. Prior to operation of the Proposed Development, a comprehensive set of operational procedures will be established (based on those used at other similar facilities) which will include site-specific mitigation measures and emergency response measures.

Fuel Storage
The primary potential impact relates to a failure or accidental spill of fuel which is stored and used on site for the transformers and backup generator.

In order to minimise any impact on the underlying subsurface strata from material spillages, the fuel storage tank is located above ground in a designated fuel storage bund with an impervious base. This is bunded to a volume of 110% of the capacity

of the tank within the bund (plus an allowance of 30 mm for rainwater ingress). Drainage from the bund will be diverted for collection and safe disposal or discharged to foul sewer if suitable. Fuel delivery to the bulk storage tank will take place within a designated bunded unloading area. Delivery of fuel will be undertaken following a documented procedure which minimises risk of spills and spill containment/clean-up kit shall be readily available on site. It is anticipated, based on the Operator's experience.

Increase in hard stand
A proportion of the Proposed Development area will be covered in hardstand (c. 6,684m^2). This provides protection to the underlying aquifer but also reduces local recharge in this area of the aquifer. As the area of aquifer is large this reduction in local recharge will have no significant change in the natural hydrogeological regime.

6.7 PREDICTED IMPACT OF THE PROPOSED DEVELOPMENT

This section describes the predicted impact of the Proposed Development following the implementation of the remedial and mitigation measures.

6.7.1 Construction Phase

The implementation of mitigation measures outlined in Section 6.6.1 will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the construction phase and that the residual impact will be ***short-term-imperceptible-neutral***. Following the NRA criteria for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered ***negligible***.

6.7.2 Operational Phase

The implementation of mitigation measures highlighted in Section 6.6.2 will ensure that the predicted impacts on the geological and hydrogeological environment do not occur during the operational phase and that the residual impact will be ***long-term-imperceptible-neutral.*** Following the NRA criteria for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered ***negligible***.

6.8 RESIDUAL IMPACTS

Based on the natural conditions present and with appropriate mitigation measures (see Section 6.6) to reduce the potential for any impact of accidental discharges to ground during this phase, the potential impact on land soils, geology and hydrogeology during construction (following EPA, 2017) are considered to have a ***short-term, imperceptible*** significance, with a ***neutral*** impact on quality.

There are no likely significant impacts on the land, geological or hydrogeological environment associated with the proposed operational development of the site with mitigation in place. As such the impact is considered to have a ***long-term, imperceptible*** significance with a ***neutral*** impact on quality i.e. no effects of effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.

Following the NRA criteria for rating the magnitude and significance of impacts on the geological and hydrogeological related attributes, the magnitude of impact is considered ***negligible*** for the construction and operational phases.

6.9 CUMULATIVE IMPACTS

The anticipated cumulative effects of the Proposed Development, the development of the adjacent data storage campus and other known developments as outlined in Chapter 3 are addressed below.

In relation to the potential cumulative impact on the geological or hydrogeological environment during the construction phases, those key engineering works which would have additional impacts above are:

- Construction works will require additional removal of topsoil and subsoil cover and will further increase the vulnerability of the underlying bedrock. Although this is minimized at this location due to natural thickness of the clayey overburden. Capping of significant areas of the sites by hardstand/ buildings following construction and installation of drainage will minimise the potential for contamination of groundwater;
- Run-off containing large amounts of silt could cause damage to surface water systems and receiving watercourses. Run-off for the datacentre development and the proposed substation development will therefore need to be managed using the methods described for the Proposed Development; and
- Contamination of soils and groundwater underlying the site from accidental spillage and leakage from construction traffic and construction materials may occur unless project-specific Construction Environmental Management Plans (CEMPs) are put in place and complied with. It is proposed that project-specific CEMP's will be put in place for the the proposed 110kV substation development and datacentre development.

In relation to the potential cumulative impacts from the operational stages, the following would apply:

- Overall increase in hardstanding: Cumulatively these developments will result in localised reduced recharge to ground and increase in surface run-off. The aquifer underlying the site is a regionally important karstified (diffuse) aquifer (Rkd) (see Figure 6.4 in Chapter 6). Based on site specific and regional geological investigations there is circa >15 metres of overburden overlying the bedrock aquifer classifying it as "Low" vulnerability (GSI classification). As such, the impact is considered to be imperceptible.
- Accidental releases from fuel storage/unloading could contaminate groundwater or soil environments unless mitigated adequately i.e. bunded tanks and delivery areas. Localised accidental discharge of hydrocarbons could occur in car parking areas and along roads unless diverted to surface water drainage system with petrol interceptors. However, all developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (primarily the Local Government (Water Pollution) Act, 1977 and 1990 as amended) such that they would be required to manage runoff and fuel leakages.
- There will be a further loss of greenfield area locally however, the area of the Proposed Development is small in the context of the overall agricultural land available in the region and the site is already secured and unavailable for agricultural use, subject to grant of permission for the Proposed Development.

The residual cumulative effect on land, soils, geology and hydrogeology for the construction and operation phases are anticipated to be ***long-term***, ***neutral*** in terms of quality and of ***imperceptible*** significance, once the appropriate mitigation measures are put in place for each development.

6.10 INTERACTIONS

Land, Soils, Geology and Hydrogeology on:

Hydrology
The main potential impact of the construction works proposed is on surface water quality (due to sediment laden run-off, material spillages) and groundwater quality (due to removal of protective soil) in the environs of the construction area; however, the implementation of a CEMP as detailed in Section 7.6.2 of Chapter 7 (Hydrology) will ensure the effect will be ***short-term, imperceptible*** and ***neutral***.

Biodiversity
The local loss of open land as a result of the Proposed Development site, which is considered to be of no significant ecological value, is negligible.

Air Quality and Climate
There is a potential for the construction activity to impact on air quality in terms of dust generated but mitigation measures outlined in both Chapter 6 (Land, Soils, Geology & Hydrogeology) and Chapter 9 (Air Quality & Climate) of this EIA Report, implemented through the CEMP, will ensure a ***short-term, not significant*** and ***neutral*** effect.

Archaeological, Architectural and Cultural Heritage
Archaeological assessment for the Proposed Development has identified features of archaeological interest on the site. Further, aspects of the Proposed Development have the potential to impact on unidentified archaeological features during construction works. However, mitigation measures detailed in Section 12.6.1 of Chapter 12 (Archaeological, Architectural and Cultural Heritage) including a comprehensive programme of archaeological excavation will ensure that the effect is ***long-term, imperceptible*** and ***neutral***.

Waste Management
As detailed in Chapter 15 (Waste Management), excavated soil and stone may be generated from the site preparation, excavations and levelling works required to facilitate construction. It is anticipated that c. 17,000m^3 of soil and stone will be removed off site for reuse or recovery, where practical, with disposal as last resort. Adherence to the mitigation measures in Chapter 15 and the requirements C&D Waste Management Plan (included as Appendix 15.1), will ensure the effect is ***long-term, imperceptible*** and **neutral.**

6.11 REFERENCES

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APPENDIX 6.1

NRA CRITERIA FOR RATING THE MAGNITUDE AND SIGNIFICANCE OF IMPACTS AT EIA STAGE

NATIONAL ROADS AUTHORITY (NRA, 2009)

Table 1 Criteria for rating site importance of Geological Features (NRA, 2009)

Magnitude of Impact	Criteria	Typical Example
Very High	Attribute has a high quality, significance or value on a regional or national scale. Degree or extent of soil contamination is significant on a national or regional scale. Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale.	Geological feature rare on a regional or national scale (NHA) Large existing quarry or pit Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale.	Contaminated soil on site with previous heavy industrial usage Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site) Well drained and/or high fertility soils Moderately sized existing quarry or pit Marginally economic extractable mineral resource
Medium	Attribute has a medium quality, significance or value on a local scale Degree or extent of soil contamination is moderate on a local scale Volume of peat and/or soft organic soil underlying route is moderate on a local scale	Contaminated soil on site with previous light industrial usage Small recent landfill site for mixed wastes Moderately drained and/or moderate fertility soils Small existing quarry or pit Sub-economic extractable mineral resource
Low	Attribute has a low quality, significance or value on a local scale Degree or extent of soil contamination is minor on a local scale Volume of peat and/or soft organic soil underlying route is small on a local scale	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

Table 2 Criteria for rating impact magnitude at EIS stage – Estimation of magnitude of impact on soil / geology attribute (NRA, 2009)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss of high proportion of future quarry or pit
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Loss of moderate proportion of future quarry or pit reserves
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Loss of small proportion of future quarry or pit reserves
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor Beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage feature
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage
Major Beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage feature

Table 3 Criteria for rating Site Attributes - Estimation of Importance of Hydrogeology Attributes (NRA, 2009)

Magnitude of Impact	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple well fields Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Inner source protection area for regionally important water source

High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers Locally important potable water source supplying >1000 homes Outer source protection area for regionally important water source Inner source protection area for locally important water source
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes Outer source protection area for locally important water source
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying <50 homes

Table 4 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute (NRA, 2009)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and /or quality and integrity of attribute	Removal of large proportion of aquifer. Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. Potential high risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >2% annually.
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Removal of moderate proportion of aquifer. Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems. Potential medium risk of

		pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >1% annually.
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Removal of small proportion of aquifer. Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. Potential low risk of pollution to groundwater from routine run-off. Calculated risk of serious pollution incident >0.5% annually.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Calculated risk of serious pollution incident <0.5% annually.

Table 5: Rating of Significant Environmental Impacts at EIS Stage (NRA, 2009)

Importance of Attribute	**Magnitude of Importance**			
	Negligible	**Small Adverse**	**Moderate Adverse**	**Large Adverse**
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/moderate	Profound/Significant	Profound
High	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

APPENDIX 6.2

BOREHOLE LOGS 2000 INVESTIGATION & LABORATORY RESULTS

IGSL (AWN, 2000)

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Monitoring Well Log BH 3

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 15/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: G. Walsh

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Firm brown sandy slightly gravelly CLAY with fine to coarse angular gravels.	1		
Stiff brown grey sandy gravelly Clay with fine to coarse angular gravels and occasional cobbles	1.9		
Dark grey limestone	2.0		
End of Borehole 2.0mbgl			
Borehole Dry			

Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):	None		
Driller: IGSL	Static Water Level (mbgl):			

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Monitoring Well Log BH 4

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 16/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: G. Walsh

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft to firm dark brown sandy slightly gravelly CLAY with occasional cobbles.	1.5		
Stiff brown grey sandy gravelly Clay with occasional angular cobbles	1.8		
Dark grey limestone	1.9		
End of Borehole 1.9mbgl Borehole Dry			

Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):	None		
Driller: IGSL	Static Water Level (mbgl):			

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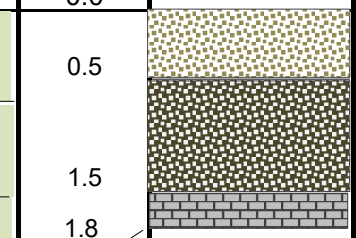
Monitoring Well Log BH 5

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 16/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: G. Walsh

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Firm to stiff dark brown sandy gravelly CLAY with occasional cobbles.	0.5		
Firm to stiff dark brown sandy CLAY with frequent angular cobbles	1.5		
Firm to stiff dark brown grey sandy CLAY with frequent angular cobbles of Limestone.	1.8		
End of Borehole 1.9mbgl Borehole Dry			



Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):	None		
Driller: IGSL	Static Water Level (mbgl):			

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Monitoring Well Log BH 6

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 16/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: G. Walsh

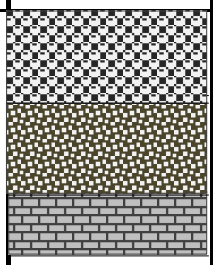
SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft to firm light brown sandy CLAY with occasional angular cobbles.	0.5		
Soft to stiff light to medium brown sandy gravelly CLAY with occasional angular cobbles.	1.0		
Firm to stiff medium to dark brown grey sandy CLAY with frequent angular and subangular cobbles.	1.7		1.7
Stiff brownish grey sandy CLAY with medium - large sub-angular cobbles of Limestone.	2.0		
End of Borehole 2.0mbgl			

Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):	1.7		
Driller: IGSL	Static Water Level (mbgl):			

awnconsulting

Monitoring Well Log BH 7

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 21/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: D. Casey

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft - firm dark brown CLAY with occasional subangular pebbles.	0.8		
Soft - firm grey sandy CLAY with some angular pebbles	1.3		
Weathered rock	1.6		
End of Borehole 1.6mbgl			

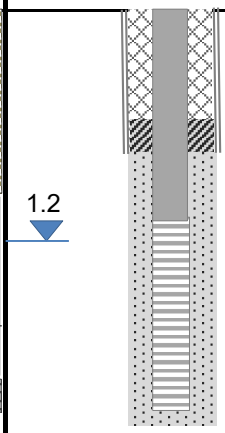
Drill Method:Cable Percussion	Hole Diameter:	
	Top of Casing (mAOD):	
Casing Length (m):		
	Water Strikes (mbgl):	
Driller: IGSL	Static Water Level (mbgl):	

awnconsulting

Monitoring Well Log BH 8

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 16/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: G. Walsh

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft to firm medium brown sandy gravelly CLAY with occasional angular cobbles.	1.0		
Soft to stiff greyish brown sandy gravelly CLAY with black organic material. No odour noted from the black material. Plastic noted at c.1.6 - 1.8m			1.2
Possible rock at 1.8m	1.8		
End of Borehole 1.8mbgl			

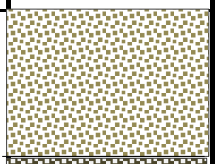
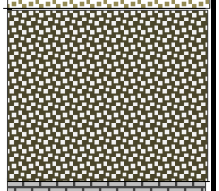


Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):	1.2		
Driller: IGSL	Static Water Level (mbgl):	1.25		

awnconsulting

Monitoring Well Log BH 9

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 21/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: D. Casey

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft dark brown sandy CLAY with occasional angular cobbles.	0.6		
Very soft grey brown sandy CLAY with some sub-angular pebbles and cobbles	1.4		
Weathered rock at 1.4mbgl			
End of Borehole 1.5mbgl			

Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller: IGSL	Static Water Level (mbgl):			

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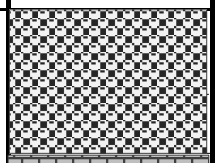
Monitoring Well Log BH 10

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 21/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: D. Casey

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft dark brown CLAY with occasional subangular pebbles.			
Weathered Bedrock	1.0		
End of Borehole 1.6mbgl	1.6		

Drill Method:Cable Percussion	Hole Diameter:	
	Top of Casing (mAOD):	
Casing Length (m):		
	Water Strikes (mbgl):	
Driller: IGSL	Static Water Level (mbgl):	

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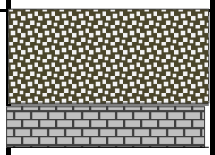
Monitoring Well Log BH 11

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 21/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: D. Casey

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft dark brown CLAY with subangular pebbles.	0.3		
Weathered bedrock			
End of Borehole 0.3m			

Drill Method:Cable Percussion	Hole Diameter:	
	Top of Casing (mAOD):	
Casing Length (m):		
	Water Strikes (mbgl):	
Driller: IGSL	Static Water Level (mbgl):	

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Monitoring Well Log BH 12

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 21/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: D. Casey

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft dark brown CLAY with occasional subangular pebbles.	0.5		
Weathered rock	0.9		
End of Borehole 0.9mbgl			

Drill Method:Cable Percussion	Hole Diameter:	
	Top of Casing (mAOD):	
Casing Length (m):		
	Water Strikes (mbgl):	
Driller: IGSL	Static Water Level (mbgl):	

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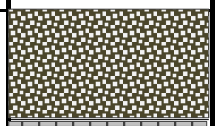
Monitoring Well Log BH 13

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 21/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: D. Casey

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft dark brown CLAY with subangular pebbles.	0.4		
Weathered bedrock (dark limestone)	0.7		
End of Borehole 0.7m			

Drill Method:Cable Percussion	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller: IGSL	Static Water Level (mbgl):			

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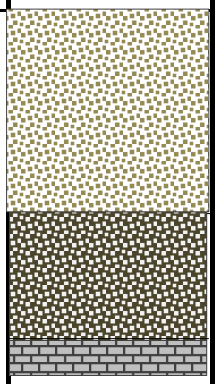
Trial Pit Log	TP 1

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 15/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: E.O'Connor

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Soft to firm, brown, slightly sandy CLAY with medium to coarse angular gravels and occasional angular cobbles			
	1.0		
Firm brown slightly sandy, gravelly clay with angular cobbles and occasional boulders			
	1.5		
Dark Grey Limestone Bedrock at 1.5m			
End of Trial Pit 1.5mbgl			



Drill Method: Excavator	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller: IGSL	Static Water Level (mbgl):			

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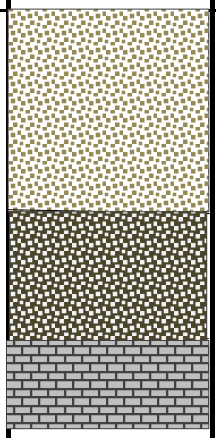
Trial Pit Log	TP 2

AWN Project Ref: 16_8877 Ground Level (mAOD): Grid Reference:	Client: CSEA Location: Project G Cruiserath	Drill date: 15/03/2016 Checked By: E.O'Connor

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Firm brown slightly sandy CLAY with medium to coarse angular gravels	1.2		
Stiff, brown clay with medium to coarse angular gravels and weathered limestone cobbles.			
Dark Grey Competent Limestone Bedrock at 2.0m	2.0		
End of Trial Pit 2.0mbgl			

Drill Method: Excavtor	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller: IGSL	Static Water Level (mbgl):			

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Trial Pit Log	TP 3

AWN Project Ref: 16_8877 Ground Level (mAOD): Grid Reference:	Client: CSEA Location: Project G Cruiserath	Drill date: 15/03/2016 Checked By: E.O'Connor

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Brown, firm, slightly sandy CLAY with fine to coarse angular gravels	1.0		
Firm to stiff, Brown to grey gravelly clay with fine to coarse angular gravels and cobbles	1.9		1.9 ▼
Dark Grey Limestone Bedrock at 1.9mbgl			
End of Trial Pit 1.9mbgl			

Drill Method: Excavator	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller: IGSL	Static Water Level (mbgl):			

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Trial Pit Log	TP 5

AWN Project Ref: 16_8877 Ground Level (mAOD): Grid Reference:	Client: CSEA Location: Project G Cruiserath	Drill date: 15/03/2016 Checked By: E.O'Connor

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Dark brown slightly sandy CLAY with fine medium angular gravels	0.3		
Dark brown stiff,slightly sandy, very gravelling CLAY with medium to coarse angular gravels	1.0		
Stiff, dark brown to grey slightly sandy, gravelly clay with medium to coarse angular gravels and cobbles	1.2		
Dark Grey Competent Limestone Bedrock at 2.0m	1.3		
End of Trial Pit 1.3mbgl			

Drill Method: Excavator	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller: IGSL	Static Water Level (mbgl):			

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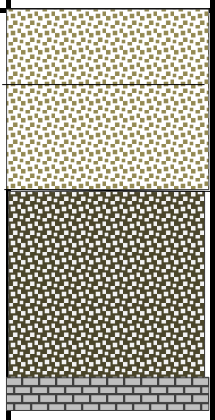
Trial Pit Log	TP 6

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 15/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: E.O'Connor

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Brown, firm, slightly sandy CLAY with fine to medium sub-angular gravels	0.2		
Brown to grey , firm,slightly sandy CLAY with fine to coarse angular gravels	0.7		
Firm to stiff, Brown to grey gravelly clay with fine to coarse angular gravels and cobbles	1.9		
Dark Grey Limestone Bedrock at 1.9mbgl			
End of Trial Pit 1.9mbgl			

Drill Method: Excavator	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):			
Driller:	Static Water Level (mbgl):			

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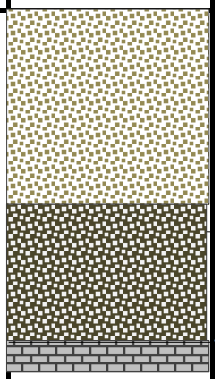
Trial Pit Log	TP 7

AWN Project Ref: 16_8877	Client: CSEA	Drill date: 15/03/2016
Ground Level (mAOD):		
Grid Reference:	Location: Project G Cruiserath	Checked By: G. Walsh

SUBSURFACE PROFILE	Depth (mbgl)	Lithology	Well Construction
Ground surface	0.0		
Brown firm to stiff, slightly sandy CLAY with fine to medium sub-angular gravels	0.9		
Stiff, Brown to grey slightly sandy clay with medium to coarse angular gravels with occasional sub-rounded boulders	1.9		1.9 ▼
Dark Grey Limestone Bedrock at 1.9mbgl			
End of Trial Pit 1.9mbgl			



Drill Method:	Hole Diameter:			
	Top of Casing (mAOD):			
Casing Length (m):				
	Water Strikes (mbgl):	1.9		
Driller: IGSL	Static Water Level (mbgl):			

IGSL Limited

CSEA

IDA Donore Road Drogheda

Site Investigation Report

Project No. 22473

June 2020

Report

M7 Business Park
Naas
Co. Kildare
Ireland

T: +353 (45) 846176
E: info @igsl.ie
W: www.igsl.ie

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Report on a Site Investigation
At
Drogheda IDA
On behalf of
CSEA

Report No. 22473

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3.0 Laboratory Testing (Geotechnical)
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4 Infiltration Test results
5 Laboratory Test Results (Geotechnical)
6 Laboratory Test Results (Environmental)
7 Site Plan

FOREWORD

The following conditions and notes on the geotechnical site investigation procedures should be read in conjunction with this report.

Standards

The ground investigation works for this project have been carried out by IGSL in accordance with Eurocode 7 - Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as BS 5930 (1999), BS 1377 (Parts 1 to 9) and Engineers Ireland Specification & Related Documents for Ground Investigation in Ireland (2006). A new National Annex for use in the Republic of Ireland is currently in circulation for comment and will be adopted in the near future. In the mean time, the following Irish (IS) and European Standards or Norms are referenced:

- IS EN 1997-2 Eurocode 7: 2007 – Geotechnical Design – Part 2: Ground Investigation & Testing
- IS EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- IS EN ISO 14688-1:2002 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- IS EN ISO 14688-2:2004 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Classification Principles
- IS EN ISO 14689-1:2004 Geotechnical Investigation and Testing - Identification & Classification of Rock, Part 1: Identification & Description

Reporting

Recommendations made and opinions expressed in this report are based on the strata observed in the exploratory holes, together with the results of in-situ and laboratory tests. No responsibility can be held by IGSL Ltd for ground conditions between exploratory hole locations.

The engineering logs provide ground profiles and configuration of strata relevant to the investigation depths achieved and caution should be taken when extrapolating between exploratory points. No liability is accepted for ground conditions extraneous to the investigation points.

This report has been prepared for CSEAConsulting Engineers and the information should not be used without prior written permission. The recommendations developed in this report specifically relate to the proposed development. IGSL Ltd accepts no responsibility or liability for this document being used other than for the purposes for which it was intended.

Boring Procedures

Unless otherwise stated, 'shell and auger' or cable percussive boring technique has been employed as defined by Section 6.3 of IS EN ISO 22475-1:2006. The boring operations, sampling and in-situ testing complies with the recommendations of IS EN 1997-2:2007 and BS 1377:1990 and EN ISO 22476-3:2005. The shell and auger boring technique allows for continuous sampling in clay and silt above the water table and sand and gravel below the water table (Table 2 of IS EN ISO 22475-1:2006).

It is highlighted that some disturbance and variations is unavoidable in particular ground (e.g. blowing sands, gravel / cobble dominant glacial deposits etc). Attention is drawn to this condition, whenever it is suspected. Where cobbles and boulders are recorded, no conclusion should be drawn concerning the size, presence, lithological nature, or numbers per unit volume of ground.

Rotary Drilling Procedures
Rotary drilling methods have been used to recover bedrock samples in line with Section 3.5 of IS EN 1997-2:2007 and IS EN ISO 22475-1. Where cable percussive boreholes terminated prematurely on an obstruction within overburden, open hole drilling methods (odex or symmetrix) were utilized to advance the drillholes through the superficial deposits with coring in bedrock. The key objectives of the rock sampling were to obtain high core recovery (TCR), minimize sample disturbance and facilitate accurate identification of strength, weathering and discontinuity characteristics.

In-Situ Testing
Standard penetration tests were conducted strictly in accordance with Section 4.6 of IS EN 1997-2:2007. The SPT equipment (hammer energy test) has been calibrated in accordance with EN ISO 22476-3:2005 and the Energy Ratio (E_r). A calibration certificate is available upon request. The E_r is defined as the ratio of the actual energy E_{meas} (measured energy during calibration) delivered to the drive weight assembly into the drive rod below the anvil, to the theoretical energy (E_{theor}) as calculated from the drive weight assembly. The measured number of blows (N) reported on the engineering logs are uncorrected. In sands, the energy losses due to rod length and the effect of the overburden pressure should be taken into account (see IS EN ISO 22476-3:2005).

Groundwater
The depth of entry of any influx of groundwater is recorded during the course of boring operations. However, the normal rate of boring does not usually permit the recording of an equilibrium level for any one water strike. Where possible drilling is suspended for a period of twenty minutes to monitor the subsequent rise in water level. Groundwater conditions observed in the borings or pits are those appertaining to the period of investigation. It should be noted however, that groundwater levels are subject to diurnal, seasonal and climatic variations and can also be affected by drainage conditions, tidal variations etc.

Engineering Logging
Soil and rock identification has been based on the examination of the samples recovered and conforms with IS EN ISO 14688-1:2002 and IS EN ISO 14689-1:2004. Rock weathering classification conforms to IS EN ISO 14689-1:2003 while discontinuities (bedding planes, joints, cleavages, faults etc) are classified in accordance with 4.3.3 of IS EN ISO 14689-1:2003. Rock mechanical indices (TCR, SCR, RQD) are defined in accordance with IS EN ISO 22475-1:2006.

Retention of Samples
Samples shall be retained for a period of 60 days following approval of the final factual report, as detailed in the Scope of Works.

Report on a Site Investigation
At
Drogheda IDA
On behalf of
CSEA

Report No. 22473 Date June 2020

1.0 Introduction

An investigation of ground conditions was carried out at the site of the proposed IDA development at Donore Road, Drogheda. The fieldwork entailed the following elements.

- Boreholes were constructed in a total of fifteen locations using light cable tool techniques. The purpose of these boreholes was to establish the composition and condition of the sub-soils.

- Rotary techniques were employed at each borehole location to ascertain the nature of the obstructing material on which the boreholes were terminated. Also established was the presence, composition and condition of bedrock within the scheduled depths.

- Trial pits were excavated in an additional nineteen locations to permit detailed examination of the upper soils, and to permit the recovery of bulk samples for laboratory analysis.

- Infiltration tests were performed to ascertain the suitability of the sub-soils for soakaway purposes.

This report contains the fieldwork records and the results of associated geotechnical and environmental laboratory tests. Also included is a discussion of ground conditions in relation to foundation design and earthworks operations.

2.0 Fieldwork

2.1 Boreholes

Boreholes were constructed in a total of fifteen locations, as shown on the site plan enclosed in Appendix 7, while the descriptions and depths of the various soils encountered are shown on the boring records enclosed in Appendix 1. Also shown on these records are the depths at which samples were recovered, the results of in-situ Standard Penetration Tests (SPT), and the groundwater conditions observed during the course of boring operation.

The boreholes revealed layers of mottled brown and grey gravelly clay which was in a soft to firm or firm condition. These soils were present to depths ranging from 1.4 metres to 2.8 metres where there was a transition to dark grey/black gravelly clay in a stiff to very stiff condition. The results of the SPT tests show a marked increase in strength between the upper soils and

the underlying dark grey/black deposits. While most of the boreholes remained dry, some instances of water ingress were noted.

The borehole findings are summarised in Table 1.

Borehole Number	Ground Level (mOD)	Depth to stiff grey/black gravelly CLAY (below GL)	Level of stiff grey/black gravelly CLAY (mOD)	Groundwater	
				Strike (m bgl)	Rose to (m bgl)
BH01	54.01	2.40	51.61	None	None
BH02A	51.03	2.40	48.63	None	None
BH03	52.75	2.50	50.25	2.4	1.9
BH04	50.39	2.80	47.59	6.5	seepage
BH05	55.69	1.90	53.79	None	None
BH06	51.87	2.50	49.37	None	None
BH07	49.59	2.50	47.09	None	None
BH08	51.99	1.40	50.59	None	None
BH08A	51.99	1.40	50.59	1.4	seepage
BH09	54.21	2.50	51.71	1.4	1.0
BH10	53.49	2.3 (obstruction)	51.19	None	None
BH11	56.28	2.50	53.78	3.3	2.5
BH12	52.79	2.50	50.29	1.9	1.2
BH13	52.41	1.80	50.61	5.4	4.8
BH14	53.82	2.40	51.42	None	None
BH15	55.03	1.50	53.53	None	None
BH15A	55.03	2.00	53.03	None	None

Table 1

2.2 Rotary Drilling and Coring

Symmetrix open hole drilling techniques were employed to extend the boreholes to depths of 15 to 20 metres, identifying the sub-soils from the flush returns. The condition of the sub-soils was determined from the results of SPT tests which were performed at regular intervals.

The rotary records indicate that very stiff to hard dark grey/black gravelly clay was present to the drilled depths. The was no evidence of bedrock. Since the relatively short drilling period does not permit accurate measurement of ground water, standpipes were installed in selected locations to facilitate long-term monitoring. The rotary information is presented in Table 2.

Borehole Number	Ground Level (mOD)	Depth to stiff grey/black gravelly CLAY (below GL)	Bored Depth (m bgl)	Drilled Depth (m bgl)	Groundwater strikes		Stand pipe (S)
					Borehole (m bgl)	Rotary (m bgl)	
BH/RC01	54.01	2.40	3.40	15.00	None	2.40	S
BH/RC02A	51.03	2.40	4.20	15.00	None	None	
BH/RC03	52.75	2.50	5.40	15.00	2.4	8.40	
BH/RC04	50.39	2.80	6.50	15.00	6.5	12.60	S
BH/RC05	55.69	1.90	5.20	15.00	None	2.40	S
BH/RC06	51.87	2.50	4.50	15.00	None	8.70	
BH/RC07	49.59	2.50	3.50	15.10	None	8.40	S
BH/RC08	51.99	1.40	2.80	15.10	None	7.20	S
BH/RC08A	51.99	2.10	4.20				
BH/RC09	54.21	2.50	6.20	15.00	1.4	None	
BH/RC10	53.49	2.3 (obstruction)	2.50	20.00	None	None	
BH/RC11	56.28	2.50	3.50	15.00	3.3	None	S
BH/RC12	52.79	2.50	3.90	20.00	1.9	None	
BH/RC13	52.41	1.80	5.50	20.00	5.4	None	S
BH/RC14	53.82	2.40	4.30	20.00	None	None	S
BH/RC15	55.03	1.50	3.20		None		
BH/RC15A	55.03	2.00	4.10	20.00	None	None	S

Table 2

2.3 Trial pits

Trial pits were excavated in nineteen locations indicated on the site plan enclosed in Volume 7 while the descriptions and depths of the various soils encountered are show on the trial pit records enclosed in Appendix 3. The trial pit findings are summarised in Table 3.

Location	Depth of firm mottled CLAY (m bgl)	Stiff brown gravelly CLAY		Remarks	Groundwater
		From	to		
TP01	> 3.0	n/a	n/a		seepage (0.8)
TP02	1.80	1.80	2.50	obstruction	None
TP03	1.20	1.20	2.20	obstruction	seepage (1.2)
TP04	> 3.0	n/a	n/a		None
TP05	2.20	2.20	2.80	obstruction	none
TP06	1.40	1.40	2.50	obstruction	seepage (0.6)
TP07	2.80	2.80	3.00	scheduled	none
TP08	2.20	2.20	2.50	obstruction	none
TP09	2.10	2.10	3.00	scheduled	none
TP10	0.60	0.60	2.50	obstruction	none
TP11	1.10	1.10	3.00	scheduled	none
TP12	2.20	2.20	3.00	scheduled	seepage (1.0)
TP13	1.80	1.80	3.00	scheduled	seepage (1.3)
TP14	1.60	1.60	3.00	scheduled	none
TP15	1.40	1.40	2.60	obstruction	seepage (1.5)
TP16	1.80	1.80	2.50	obstruction	seepage (1.0)
TP17	2.00	2.00	3.00	scheduled	seepage (0.50
TP18	1.60	1.60	3.00	scheduled	none
TP19	1.60	1.60	2.50	obstruction	seepage (1.6

Table 3

The pits encountered mottled brown and grey sandy gravelly clay which was generally in firm condition. However, the upper material at TP04, TP08, TP14 and TP17 had the appearance of made ground.

Penetration of the firm deposits revealed stiff brown gravelly clay, at depths ranging from 0.6 metres to 2.8 metres. While some of the pits achieved the scheduled depth of 3.0 metres, several pits met obstructions at shallower depths. While some pits remained dry, groundwater was observed as seepages in several locations.

2.4 Infiltration Tests

Infiltration tests were performed in four locations to assess the suitability of the sub-soils for soakaway purposes. Tests were performed in accordance with BRE Digest 365 ‘Soakaway Design’.

To obtain a measure of the infiltration rate of the sub-soils, water is poured into the test pit, and records taken of the fall in water level against time. This procedure is repeated twice more to ensure saturation of the sub-soils. Normally the results for the final stage of testing, following the saturation periods, are used for soakaway design purposes. The infiltration rate is the volume of water dispersed per unit exposed area per unit of time, and is generally expressed as metres/minute or metres/second.

In all of the tests on this site there was no measurable fall in water level over the first saturation period. No further testing was considered practical or necessary.

2.5 Groundwater Monitoring

Standpipes were installed selected coreholes in order to permit long term monitoring of groundwater levels.

The site was revisited post-fieldwork in order to take readings from the standpipes. These are summarised on Table 4.

Location	Hole Depth (m BGL)	Top of Response Zone (m BGL)	Base of Response Zone (m BGL)	Groundwater Depth 22/05/2020 (m BGL)	Groundwater Depth 05/06/2020 (m BGL)
RC01	15.00	1.00	15.00	3.45	3.40
RC04	15.00	1.00	15.00	2.80	2.60
RC05	15.00	1.00	15.00	6.35	10.05
RC07	15.00	1.00	15.00	2.80	2.70
RC08	15.00	1.00	15.00	3.75	3.80
RC11	20.00	1.00	20.00	1.90	1.65
RC13	20.00	1.00	20.00	2.25	2.45
RC14	20.00	1.00	20.00	Dry	1.15
RC15	20.00	1.00	20.00	Dry	Dry

Table 4

2.6 As-Built Survey

On completion of fieldworks, the location (x,y) and elevation (z) of each exploratory location was determined by detailed survey using GPS Realtime Kinetic survey instrument.

The National Grid survey co-ordinates and ground levels related to Malin Head Datum are presented on the exploratory hole records and these were used to plot the as-built locations on the Site Plan in Appendix 7 of this report.

3.0 Laboratory Test Results (Geotechnical)

3.1 Particle Size Distributions

Grading curves for selected samples of the sub-soils indicate that they are well-graded. However, for practical reasons, cobbles and boulders were generally excluded from the test specimens.

3.2 Index Properties

The results of plastic and liquid limit tests classify the fine soil as clay of low to medium plasticity.

3.3 Compaction Tests

The purpose of a compaction test is to determine the dry density of soil when it is compacted in a specific manner over a range of moisture content values. The results are plotted as a graph of moisture content against dry density to determine the moisture content at which the maximum dry density is achieved.

For this project, testing was performed in accordance with method 3.3 of BS 1377: Part 4: 1990. In this test, soil passing the 20 mm sieve is compacted into a one litre compaction mould, in three layers, with a 2.5 kg rammer falling through a height of 300 mm. The results are summarised in the following table which also shows the dry density and moisture content values obtained from the samples as received from site. In each case the dry density of the received sample is expressed as a percentage of the optimum.

The test results are summarised in Table 5

Location	Depth (m bgl)	"as received" Moisture Content %	"as received" Dry Density Mg/m3	Maximum Dry Density Mg/m3	Optimum Moisture Content %	Dry Density % of Optimum
TP01	1.00	20.0	1.67	1.71	17.0	98
TP03	1.00	14.0	1.90	1.99	11.0	95
TP05	1.00	11.0	2.00	2.07	10.0	97
TP07	1.00	13.0	1.90	1.90	13.0	100
TP09	1.00	20.0	1.72	1.82	14.0	95
TP11	1.00	20.0	1.73	1.82	13.0	95
TP13	1.00	22.0	1.68	1.87	13.0	90
TP18	1.00	22.0	1.66	1.76	14.0	94
TP19	1.00	17.0	1.83	1.94	11.0	94

Table 5

3.4 California Bearing Ratio (CBR)

CBR tests were performed in accordance with test No.7 of BS 1377: Part 4: 1990. To minimise disturbance, specimens were prepared in accordance with clause 7.2.3.3 Method 2. This entails compressing the soil into the test mould in three equal layers using a hydraulic ram. In accordance with the specification the test specimens had a maximum particle size not exceeding 20 mm. Tests were performed on the top and base of each specimen
The results are summarised in Table 6. The tests recorded a wide range of average CBR values.

Location	Depth (b gl)	CBR % Top	Base	Average
TP01	1.0	2.1	2.8	2.5
TP03	1.0	1.7	1.9	1.8
TP05	1.0	3.2	4.3	3.8
TP07	1.0	8.6	12.0	10.3
TP09	1.0	2.0	2.2	2.1
TP11	1.0	3.2	2.5	2.9
TP13	1.0	0.5	0.6	0.6
TP15	1.0	1.6	2.0	1.8
TP18	1.0	2.3	2.8	2.6
TP19	1.0	2.1	2.1	2.1

Table 6

3.5 Moisture Condition Value (MCV)

MCV tests were performed on specimens at their, " as sampled " water content values obtained after removal of material retained on the 20 mm sieve. The procedures are in accordance with BS1377: Part4: 1990, Clause 5.4.

The MCV test provides a rapid method of assessing the suitability of a soil for re-use in earthworks. The test is based on determination of the compactive effort, in terms of the number of blows of a calibrated drop-hammer, to fully compact a soil specimen. The stiffer the soil, the more compactive effort is required to achieve maximum density.

While an MCV value of 8 is generally indicative of soil in a suitable condition for highway works, it is important to calibrate the apparatus for site specific soils and to relate the MCV value to the required soil parameters such as shear strength or CBR value. Experience suggests that, in many cases, MCV values of less than 8 are acceptable.

The test specimens exhibited a wide range of MCV values, reflecting the variations in soil condition. The results are summarised in Table 7.

Location	Depth (bgl)	MCV
TP01	1.0	11.8
TP03	1.0	7.8
TP05	1.0	7.2
TP07	1.0	11.8
TP09	1.0	8.1
TP11	1.0	8.4
TP13	1.0	3
TP15	1.0	7
TP18	1.0	8.2
TP19	1.0	6.6

Table 7

3.6 Frost Heave Testing

Frost heave tests were undertaken on two samples of the upper clay soils to determine their susceptibility to frost heave. Testing was undertaken by Celtest in accordance with BS 812: Part 124:2009 – Annex B.

The results are summarised on Table 8.

Location	Depth (bgl)	Mean Frost Heave (mm)
TP15	0.8 – 1.2	24.2
TP18	0.8 – 1.2	21.0

Table 8

3.7 Chemical Analysis

The results of chemical testing showed low concentrations of soluble sulphates. In addition, the pH values indicated near neutral conditions.

Since the soluble sulphate concentrations were significantly below 0.5 g/l, and pH values were above 2.5, a Design Sulphate Class of DS-1 may be assumed in accordance with Table C1 of BRE Special Digest 1 Concrete in Aggressive Ground: 2005. Assuming a static groundwater table, an ACEC (Aggressive Chemical Environment for Concrete) Classification of AC-1s is applicable.

4.0 Laboratory Test Results (Environmental)

Environmental testing was scheduled on eighteen soil samples recovered from the boreholes and trial pits in order to screen for inherent contamination and to assess their suitability for disposal to an inert landfill.

Samples were tested in accordance with the RILTA Suite, which is used to determine the suitability of soils for disposal to a landfill. The RILTA suite includes Heavy Metals, Polycyclic Aromatic Hydrocarbons (PAH), TPH-CWG, BTEX, PCB and Total Organic Carbon (TOC) carried out on dry soil samples. Also included are leachate analyses, whereby leachate is generated in accordance with CEN 10:1 specification and this is tested for the presence of recognised contaminants including Heavy Metals, Dissolved Organic Carbon (DOC) and Total Dissolved Solids (TDS). An Asbestos Screen is also included in the RILTA Suite.

5.0 Discussion

A greenfield site at Donore Road, Drogheda is to be developed as an IDA Business Park. An investigation of ground conditions was carried out to ascertain foundation requirements for structures and pavements. Also considered was the suitability of the sub-soils for soakaway purposes, and the reusability of excavated soils in earthworks. In addition, environmental testing was carried out to detect any contamination which would preclude disposal of excavated soils to an inert landfill.

Boreholes revealed mottled brown and grey gravelly clay, generally in a soft to firm, or firm condition. This material was present to depths ranging from 1.4 metres to 2.8 metres where it was underlain by dark grey/black gravelly clay in a stiff to very stiff condition. Rotary drilling indicated the presence of stiff to hard deposits to the scheduled depths of 15 to 20 metres. Trial pits generally showed a transition from firm mottled deposits to stiff gravelly clay at depths ranging from 0.6 metres to 2.8 metres. There was also evidence of made ground in places. Groundwater ingress was noted at various depths, generally as seepages.

5.1 Structural Foundations

The sub-soils encountered in the investigation are the product of glacial deposition. The main body of soil is in a stiff to hard condition, and is generally dark grey or black. However, as a consequence of weathering, the near-surface material is weaker, with a mottled coloration.

From the aspect of structural foundations, the variable condition of the upper mottled deposits, and the presence of soft zones, would tend to limit the presumed bearing resistance to approximately 50kN/m2, increasing to 75kN/m2 subject to visual examination.

Bearing in mind the stiff to hard condition of the underlying dark grey/black deposits, and the increase in strength with depth, a presumed bearing resistance of 200kN/2 to 250kN/m2 is applicable. However, this implies founding depths approaching 2.5 metres to 3.0 metres in places. The use of trench fill techniques should, therefore, be considered. Account should also be given to control of groundwater although the field records suggest that ingress was noted as seepages.

If high point loads are anticipated, consideration can be given to the use of piles embedded in the very stiff to hard deposits. Since the bearing capacity of a pile can vary considerably, depending on the method of construction and installation, the advice of experienced contractors should be sought as to the most appropriate pile design for any particular type of pile.

5.2 Pavements

The sub-base requirements should be determined in accordance with NRA HD25-26/10 Volume7: Pavement Design and Maintenance. Figure 4.1 in this publication shows sub-base requirements in relation to the CBR value of the sub-grade. Designs can be sub-base only or sub-base in conjunction with a capping layer. The minimum permitted design CBR is 2.5%.

Where the CBR value of the sub-grade is less than 2.5%, the options are as follows.

- The soft soil can be removed and replaced with a more suitable material. If there is a limited thickness of soft soil it can be removed in its entirety.

- Where the soil is cohesive, consideration can be given to stabilisation using cement or lime.

The laboratory tests recorded a wide range of CBR values, some of which are less than 2.5%. It would, therefore, be advisable to perform plate bearing tests on the stripped formation to assess sub-base requirements. The use of a geotextile or geo-grid may be beneficial where the formation is soft. In view of the instances of water ingress observed in the investigation, and the results of groundwater monitoring to date, adequate drainage of the pavement layers will be an important consideration.

It is strongly advised that monitoring of standpipes continues to the period of construction in order to monitor the fluctuations in groundwater levels. It is noted that the monitoring to date has been undertaken during a particularly dry weather period and water levels would be expected to rise during periods of inclement weather.

5.3 Earthworks

The suitability of excavated soil for re-use in earthworks can be assessed from the results of MCV tests. For general purposes, a minimum value of 8 can be used. However lower values can be considered for specific sites, taking into account the required strength or density parameters. Laboratory tests on selected samples recorded a wide range of MCV values reflecting the variable condition of the upper soils.

The compacted dry density of a soil sample in relation to the maximum dry density attained under a specific compactive effort provides an indication of suitability in earthworks. All but two of the soil samples attained dry density values in excess of 95% of optimum.

The test results suggest that control of earthworks will be required to ensure that only suitable soil is selected for use as engineering fill.

5.4 Environmental Considerations

The results of WAC analyses showed that the samples satisfy the criteria for inert waste as stipulated in the European Landfill Directive. If required, the results of the RILTA Suite can also be used to carry out a full Waste Characterisation Assessment (WCA). This assessment is undertaken by an environmental specialist and determines whether the soils are hazardous or non-hazardous in advance of being dispatched to landfill.

It should be noted that the chosen landfill should be furnished with the WAC results (and WCA where undertaken) in advance of any soils being removed from site. Depending on the extent and depth of excavation, the landfill may require additional testing to achieve the frequency of analysis (i.e. number of samples per unit volume of excavation) that meets their license requirements.

Appendix 1 Boring Records

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH01**
SHEET Sheet 1 of 1

CO-ORDINATES 706,705.01 E
773,897.90 N
GROUND LEVEL (m AOD) 54.01

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 3.40

DATE COMMENCED 23/03/2020
DATE COMPLETED 24/03/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY D. Tolster
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		53.86	0.15						
	Soft brown mottled grey slightly sandy gravelly CLAY				AA135462	B	0.60			
1					AA135463	B	1.00		N = 8 (1, 0, 1, 2, 2, 3)	
			52.61	1.40						
	Firm brown mottled grey slightly sandy gravelly CLAY with a medium cobble content									
2					AA135464	B	2.20		N = 21 (1, 3, 5, 5, 5, 6)	
			51.61	2.40						
	Stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content		51.11	2.90						
3	Stiff dark grey to black gravelly CLAY with a medium cobble content and a medium boulder content				AA135465	B	3.00		N = 95 (5, 5, 15, 21, 14, 45)	
			50.61	3.40						
	End of Borehole at 3.40 m				AA135466	B	3.40			
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.2	3.4	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH02**
SHEET Sheet 1 of 1

CO-ORDINATES 706,873.88 E
773,917.16 N
GROUND LEVEL (m AOD) 51.03

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 2.60

DATE COMMENCED 14/05/2020
DATE COMPLETED 14/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		50.93	0.10						
	Firm brown mottled grey slightly sandy gravelly CLAY				AA135141	B	1.00		N = 18 (4, 4, 6, 4, 4, 4)	
1			49.43	1.60						
	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with a high cobble content and a medium boulder content				AA123142	B	2.00		N = 50/225 mm (3, 9, 18, 18, 14)	
2			48.43	2.60						
	Obstruction End of Borehole at 2.60 m									
3										
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.5	2.6	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling. Obstruction encountered at 2.60m . Relocated to BH02A and attempted rebore.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH02A**
SHEET Sheet 1 of 1

CO-ORDINATES
GROUND LEVEL (m AOD)

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 4.20

DATE COMMENCED 14/05/2020
DATE COMPLETED 15/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL			0.10						
	Firm brown mottled grey slightly sandy gravelly CLAY				AA131709	B	1.00		N = 14 (2, 2, 4, 3, 3, 4)	
1				1.60						
	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with a high cobble contennt and a medium boulder content				AA131710	B	2.00		N = 23 (4, 5, 5, 5, 5, 8)	
2				2.40						
	Very stiff dark grey/black sandy gravelly silty CLAY with a medium cobble content and a low boulder content				AA135143	B	3.00		N = 36 (3, 6, 6, 9, 10, 11)	
3										
					AA135144	B	4.00		N = 50/225 mm (14, 11, 17, 18, 15)	
4				4.20						
	Obstruction End of Borehole at 4.20 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.5	3.6	0.5	
4.1	4.2	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. BH03
SHEET Sheet 1 of 1

CO-ORDINATES 706,764.26 E, 773,947.36 N
GROUND LEVEL (m AOD) 52.75

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 5.40

DATE COMMENCED 23/03/2020
DATE COMPLETED 23/03/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY D. Tolster
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		52.60	0.15						
	Soft brown mottled grey slightly sandy gravelly CLAY with a low cobble content				AA135455	B	0.60			
			51.75	1.00	AA135456	B	1.00		N = 11 (1, 0, 1, 2, 4, 4)	
1	Firm brown mottled grey slightly sandy gravelly CLAY with a medium cobble content									
2					AA135457	B	2.20		N = 50 (3, 4, 5, 20, 18, 7)	
			50.25	2.50	AA135458	B	2.50			
	Stiff grey sandy gravelly CLAY with a medium cobble content and a low boulder content									
3					AA135459	B	3.00		N = 36 (4, 7, 10, 10, 8, 8)	
			49.15	3.60						
	Stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content									
4					AA135460	B	4.00		N = 35 (2, 10, 7, 8, 9, 11)	
5					AA135461	B	5.00		N = 50/260 mm (7, 13, 13, 15, 16, 6)	
			47.35	5.40						
	End of Borehole at 5.40 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
5.2	5.4	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.40	2.40	2.80	1.90	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH04**
SHEET Sheet 1 of 1

CO-ORDINATES 706,857.71 E
773,987.11 N
GROUND LEVEL (m AOD) 50.39

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 6.50

DATE COMMENCED 18/03/2020
DATE COMPLETED 19/03/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY D. Tolster
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		50.24	0.15						
	Soft brown mottled grey slightly sandy gravelly CLAY				AA130492	B	0.70		N = 6 (1, 0, 1, 1, 2, 2)	
1					AA130493	B	1.40			
			48.39	2.00						
2	Firm dark grey mottled brown sandy gravelly CLAY with a low cobble content				AA130494	B	2.00		N = 14 (2, 2, 3, 3, 4, 4)	
			47.59	2.80						
3	Stiff grey sandy gravelly CLAY with a low cobble content				AA130495	B	3.00		N = 22 (2, 3, 4, 5, 6, 7)	
4					AA130496	B	4.00		N = 32 (3, 3, 4, 9, 9, 10)	
			45.89	4.50	AA130497	B	4.50			
	Stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content				AA130498	B	5.00		N = 39 (12, 6, 8, 10, 11, 10)	
5										
6					AA130499	B	6.00		N = 50/280 mm (11, 8, 13, 12, 15, 10)	
			43.89	6.50						
	End of Borehole at 6.50 m									
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
6.3	6.5	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
6.50	6.50			20	Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**BOREHOLE NO.**	**BH05**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,598.43 E 773,981.70 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (m AOD)	55.69	**BOREHOLE DEPTH (m)**	5.20
		DATE COMMENCED	12/05/2020
		DATE COMPLETED	12/05/2020
CLIENT		**SPT HAMMER REF. NO.**	
ENGINEER	CSEA	**ENERGY RATIO (%)**	
		BORED BY	P. Thomas
		PROCESSED BY	L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		55.59	0.10						
	Firm brown mottled grey slightly sandy SILT/CLAY with occasional gravel				AA135136	B	1.00		N = 13 (2, 2, 2, 3, 2, 6)	
			53.79	1.90						
2	Very stiff to hard dark brown /black sandy gravelly silty CLAY with a medium cobbles content and a low boulder content				AA135137	B	2.00		N = 47 (2, 5, 11, 14, 12, 10)	
3					AA135138	B	3.00		N = 37 (5, 7, 8, 9, 9, 11)	
4					AA135139	B	4.00		N = 42 (6, 14, 10, 10, 10, 12)	
5			50.49	5.20	AA135140	B	5.00		N = 50/150 mm (19, 6, 19, 31)	
	Obstruction End of Borehole at 5.20 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH06**
SHEET Sheet 1 of 1

CO-ORDINATES 706,772.96 E, 774,017.19 N
GROUND LEVEL (m AOD) 51.87

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 4.50

DATE COMMENCED 19/03/2020
DATE COMPLETED 20/03/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY D. Tolster
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		51.72	0.15						
	Soft to firm brown mottled grey slightly sandy gravelly CLAY with a low cobble content				AA130500	B	1.00		N = 6 (1, 1, 1, 2, 1, 2)	
2					AA135451	B	2.00		N = 12 (7, 2, 1, 2, 3, 6)	
			49.37	2.50						
	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with a low cobble content				AA135452	B	2.50			
3					AA135453	B	3.00		N = 34 (4, 6, 8, 8, 9, 9)	
			48.47	3.40						
	Stiff grey sandy gravelly CLAY with a medium cobble content and a low boulder content									
4					AA135454	B	4.00		N = 50/275 mm (6, 9, 10, 12, 17, 11)	
			47.37	4.50						
	End of Borehole at 4.50 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
4.3	4.5	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH07**
SHEET Sheet 1 of 1

CO-ORDINATES 706,874.56 E, 774,088.95 N
GROUND LEVEL (m AOD) 49.59

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 3.50

DATE COMMENCED 06/05/2020
DATE COMPLETED 06/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	Grey fine to coarse angular GRAVEL (MADE GROUND)		49.49	0.10						
1	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with a medium cobble content				AA135119	B	1.00		N = 19 (3, 5, 5, 4, 5, 5)	
2					AA135120	B	2.00		N = 14 (1, 3, 2, 3, 4, 5)	
			47.09	2.50						
3	Very stiff dark brown to black sandy gravelly CLAY with a medium cobble content and a low boulder content				AA135121	B	3.00		N = 50/185 mm (8, 10, 15, 19, 16)	
			46.09	3.50						
4	End of Borehole at 3.50 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.3	3.5	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH08**
SHEET Sheet 1 of 1

CO-ORDINATES 706,757.15 E
774,074.21 N
GROUND LEVEL (m AOD) 51.99

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 2.80

DATE COMMENCED 11/05/2020
DATE COMPLETED 12/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		51.89	0.10						
1	Firm to stiff brown mottled grey slightly sandy gravelly CLAY		50.59	1.40	AA135132	B	1.00		N = 14 (2, 4, 4, 4, 3, 3)	
2	Stiff dark brown to black sandy gravelly silty CLAY with a medium cobble content and a low boulder content		49.19	2.80	AA135133	B	2.00		N = 38 (3, 6, 9, 10, 9, 10)	
3	End of Borehole at 2.80 m								N = 50/150 mm (14, 11, 21, 29)	
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.6	2.8	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**BOREHOLE NO.**	**BH08A**
		SHEET	Sheet 1 of 1
CO-ORDINATES	**RIG TYPE** Dando 2000	**DATE COMMENCED**	11/05/2020
	BOREHOLE DIAMETER (mm) 200	**DATE COMPLETED**	12/05/2020
GROUND LEVEL (m AOD)	**BOREHOLE DEPTH (m)** 4.20		
CLIENT	**SPT HAMMER REF. NO.**	**BORED BY**	P. Thomas
ENGINEER CSEA	**ENERGY RATIO (%)**	**PROCESSED BY**	L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL			0.10						
	Firm brown mottled grey slightly sandy gravelly CLAY				AA131711	B	1.00		N = 11 (2, 2, 3, 2, 2, 4)	
1				1.40						
	Firm to stiff brown mottled grey slightly sandy gravelly CLAY									
2				2.10	AA131712	B	2.00		N = 26 (5, 6, 8, 5, 7, 6)	
	Very stiff to hard dark brown to black sandy gravelly silty CLAY with a medium cobble content and a low boulder content				AA135134	B	3.00		N = 53 (7, 11, 12, 12, 15, 14)	
3										
4				4.20	AA135135	B	4.00		N = 50/200 mm (15, 10, 17, 19, 14)	
	End of Borehole at 4.20 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
4	4.2	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.40	1.40			20	Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling. Completed a second attempt at BH15 to try and move beyond obstructions.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. BH09
SHEET Sheet 1 of 1

CO-ORDINATES 706,645.55 E, 774,050.06 N
GROUND LEVEL (m AOD) 54.21

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 6.20

DATE COMMENCED 24/03/2020
DATE COMPLETED 25/03/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY D. Tolster
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		54.11	0.10						
	Soft brown mottled grey slightly sandy gravelly CLAY				AA135467	B	0.50			
			53.31	0.90						
1	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with a medium cobble content				AA135468	B	1.00		N = 6 (0, 1, 1, 1, 2, 2)	
2					AA135469	B	2.00		N = 20 (1, 4, 5, 4, 5, 6)	
			51.71	2.50						
	Stiff grey sandy gravelly CLAY with a medium cobble content				AA135470	B	2.50			
3					AA135471	B	3.00		N = 23 (1, 2, 5, 5, 6, 7)	
			50.31	3.90						
4	Stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content		49.91	4.30	AA135472	B	4.00		N = 24 (3, 4, 4, 6, 6, 8)	
	Stiff black sandy gravelly CLAY with a medium cobble content and a low boulder content									
5					AA135473	B	5.00		N = 35 (7, 7, 7, 8, 10, 10)	
					AA135474	B	5.80		N = 50/210 mm (8, 17, 18, 17, 15)	
6			48.01	6.20						
	End of Borehole at 6.20 m									
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
6	6.2	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.40	1.40	1.70	1.00	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**BOREHOLE NO.**	**BH10**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,647.00 E 774,104.22 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (m AOD)	53.49	**BOREHOLE DEPTH (m)**	2.50
		DATE COMMENCED	25/03/2020
		DATE COMPLETED	25/03/2020
CLIENT		**SPT HAMMER REF. NO.**	
ENGINEER	CSEA	**ENERGY RATIO (%)**	
		BORED BY	D. Tolster
		PROCESSED BY	L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		53.39	0.10						
	Soft brown mottled grey slightly sandy SILT/CLAY with occasional fine gravel				AA135475	B	0.50			
			52.59	0.90						
1	Firm to stiff brown mottled grey slightly sandy gravelly CLAY with a medium cobble content and a medium boulder content				AA135476	B	1.00		N = 6 (1, 0, 1, 1, 2, 2)	
2					AA135477	B	2.00		N = 50/290 mm (2, 2, 5, 6, 6, 33)	
			51.19	2.30						
	OBSTRUCTION		50.99	2.50						
	End of Borehole at 2.50 m									
3										
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.3	2.5	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. BH11
SHEET Sheet 1 of 1

CO-ORDINATES 706,507.56 E
774,058.12 N
GROUND LEVEL (m AOD) 56.28

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 3.50

DATE COMMENCED 07/05/2020
DATE COMPLETED 07/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		56.18	0.10						
1	Soft to firm brown slightly sandy SILT/CLAY with occasional gravel		54.78	1.50	AA135122	B	1.00		N = 10 (3, 3, 3, 3, 2, 2)	
2	Firm brown mottled grey slightly sandy gravelly CLAY with a medium cobble content		53.78	2.50	AA135123	B	2.00		N = 16 (2, 3, 3, 4, 4, 5)	
3	Very stiff dark brown mottled grey slightly sandy gravell CLAY with a medium cobble content and a medium boulder content		52.78	3.50	AA135124	B	3.00		N = 30 (7, 9, 8, 9, 6, 7)	
4	End of Borehole at 3.50 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.3	3.5	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.30	3.30		2.50	20	Moderate

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. BH12
SHEET Sheet 1 of 1

CO-ORDINATES 706,580.97 E, 774,172.32 N
GROUND LEVEL (m AOD) 52.79

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 3.90

DATE COMMENCED 27/03/2020
DATE COMPLETED 27/03/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY D. Tolster
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		52.69	0.10						
	Soft brown mottled grey slightly sandy gravelly CLAY with a low cobble content				AA135485	B	0.50			
1					AA135486	B	1.00		N = 9 (0, 1, 1, 1, 2, 5)	
			50.99	1.80						
2	Stiff brown mottled grey slightly sandy gravelly CLAY with a medium cobble content				AA135487	B	2.00		N = 50/180 mm (8, 8, 9, 27, 14)	
			50.29	2.50						
	Very stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content									
3					AA135488	B	3.00		N = 42 (7, 6, 9, 11, 10, 12)	
			48.89	3.90						
4	OBSTRUCTION End of Borehole at 3.90 m								N = 38/75 mm (18, 12, 38)	
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.3	2.6	0.5	
3.7	3.9	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
1.90	1.90	2.50	1.20	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**BOREHOLE NO.**	**BH13**
		SHEET	Sheet 1 of 1
CO-ORDINATES	706,623.20 E 774,168.70 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (m AOD)	52.41	**BOREHOLE DEPTH (m)**	5.50
		DATE COMMENCED	25/03/2020
		DATE COMPLETED	26/03/2020
CLIENT		**SPT HAMMER REF. NO.**	**BORED BY** D. Tolster
ENGINEER	CSEA	**ENERGY RATIO (%)**	**PROCESSED BY** L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		52.31	0.10						
	Soft brown mottled grey slightly sandy SILT/CLAY with occasional gravel				AA135478	B	0.50			
1					AA135479	B	1.00		N = 6 (1, 0, 1, 1, 2, 2)	
			50.61	1.80						
2	Stifff grey gravelly CLAY				AA135480	B	2.00		N = 36 (2, 2, 10, 8, 7, 11)	
			49.91	2.50						
	BOULDER (~400mm)		49.71	2.70	AA135481	B	2.50			
3	Stiff to very stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content				AA135482	B	3.00		N = 39 (6, 8, 9, 11, 9, 10)	
4					AA135483	B	4.00		N = 21 (5, 4, 4, 4, 5, 8)	
5					AA135484	B	5.00		N = 50/285 mm (8, 9, 10, 12, 15, 13)	
			46.91	5.50						
	End of Borehole at 5.50 m									
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.5	2.7	0.5	
5.3	5.5	2	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.40	5.40		4.80	20	Moderate

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. **BH14**
SHEET Sheet 1 of 1

CO-ORDINATES 706,503.44 E, 774,203.55 N
GROUND LEVEL (m AOD) 53.82

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 4.30

DATE COMMENCED 11/05/2020
DATE COMPLETED 11/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		53.72	0.10						
	Firm brown mottled grey slightly sandy SILT/CLAY		52.92	0.90						
1	Stiff brown gravelly SILT/CLAY				AA135128	B	1.00		N = 21 (3, 5, 4, 5, 7, 5)	
2					AA135129	B	2.00		N = 25 (2, 4, 6, 5, 5, 9)	
			51.42	2.40						
3	Stiff to very stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content				AA135130	B	3.00		N = 29 (4, 4, 5, 7, 7, 10)	
4					AA135131	B	4.00		N = 50/140 mm (9, 15, 23, 27)	
			49.52	4.30						
	End of Borehole at 4.30 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
4.1	4.3	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

BOREHOLE NO. BH15
SHEET Sheet 1 of 1

CO-ORDINATES 706,410.90 E, 774,166.14 N
GROUND LEVEL (m AOD) 55.03

RIG TYPE Dando 2000
BOREHOLE DIAMETER (mm) 200
BOREHOLE DEPTH (m) 3.20

DATE COMMENCED 07/05/2020
DATE COMPLETED 08/05/2020

CLIENT
ENGINEER CSEA

SPT HAMMER REF. NO.
ENERGY RATIO (%)

BORED BY P. Thomas
PROCESSED BY L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL		54.93	0.10						
	Soft to firm brown slightly sandy gravelly CLAY		54.33	0.70						
1	Firm to stiff brown mottled grey slightly sandy SILT/CLAY with occasional gravel		53.53	1.50	AA135125	B	1.00		N = 15 (2, 2, 4, 3, 3, 5)	
2	Stiff to very stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content				AA135126	B	2.00		N = 35 (3, 5, 5, 7, 9, 14)	
3			51.83	3.20	AA135127	B	3.00		N = 50/130 mm (9, 16, 28, 22)	
	End of Borehole at 3.20 m									
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3	3.3	1	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

GEOTECHNICAL BORING RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**BOREHOLE NO.**	**BH15A**
		SHEET	Sheet 1 of 1
CO-ORDINATES	**RIG TYPE** Dando 2000	**DATE COMMENCED**	08/05/2020
	BOREHOLE DIAMETER (mm) 200	**DATE COMPLETED**	08/05/2020
GROUND LEVEL (m AOD)	**BOREHOLE DEPTH (m)** 2.90		
CLIENT	**SPT HAMMER REF. NO.**	**BORED BY**	P. Thomas
ENGINEER CSEA	**ENERGY RATIO (%)**	**PROCESSED BY**	L. Daniels

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Samples: Sample Type	Samples: Depth (m)	Samples: Recovery	Field Test Results	Standpipe Details
0	TOPSOIL			0.10						
	Soft to firm brown slightly sandy gravelly CLAY			1.10	AA139562	B	1.00		N = 12 (1, 1, 3, 5, 2, 2)	
1	Firm to stiff brown mottled grey slightly sandy SILT/CLAY with occasional gravel			2.00	AA139563	B	2.00		N = 23 (2, 2, 4, 5, 4, 10)	
2	Stiff to very stiff dark grey to black sandy gravelly CLAY with a medium cobble content and a low boulder content				AA139564	B	3.00		N = 35 (6, 5, 7, 7, 10, 11)	
3				4.10	AA139565	B	4.00		N = 50/150 mm (12, 18, 20, 30)	
4	End of Borehole at 2.90 m									
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
2.7	2.9	1	
3.9	4.1	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS CAT-scanned location and hand-dug an inspection pit to check for services before drilling. Completed a second attempt at BH15 to try and move beyond obstructions.

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 22473.GPJ IGSL.GDT 19/5/20

Appendix 2 Rotary Records

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC01**
SHEET Sheet 1 of 2

CO-ORDINATES 706,705.01 E
773,897.90 N
GROUND LEVEL (mOD) 54.01

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 06/05/2020
DATE COMPLETED 07/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH01				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00											
3									3.40	50.61		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles and boulders				
4	4.50											N = 27 (2, 3, 5, 7, 6, 9)
5		0	0	0								
	6.00								6.00	48.01		
6		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black gravelly CLAY with frequent cobbles				N = 32 (3, 6, 4, 9, 11, 8)
7	7.50											
8		0	0	0								N = 42 (2, 7, 9, 12, 11, 10)
	9.00											
9		0	0	0								N = 34 (4, 6, 7, 7, 9, 11)

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.40	2.40				Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
06-05-20	15.00	1.00	15.00	50mm SP

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC01**
SHEET Sheet 2 of 2

CO-ORDINATES 706,705.01 E
773,897.90 N
GROUND LEVEL (mOD) 54.01

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 06/05/2020
DATE COMPLETED 07/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50								10.50	43.51		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff to hard dark grey to black gravelly CLAY with frequent cobbles				N = 28 (3, 5, 5, 9, 7, 7)
12		0	0	0								N = 43 (2, 4, 6, 11, 12, 14)
13	13.50											
14	15.00	0	0	0					15.00	39.01		N = 22 (3, 3, 4, 4, 6, 8)
15								End of Borehole at 15.00 m				N = 22 (2, 4, 5, 5, 5, 7)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.40	2.40				Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
06-05-20	15.00	1.00	15.00	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC02
SHEET Sheet 1 of 2

CO-ORDINATES 706,873.88 E
773,917.16 N
GROUND LEVEL (mOD) 51.03

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 21/05/2020
DATE COMPLETED 21/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH02				
1	1.50	0	0	0								
2		0	0	0					2.30	48.73		
	3.00							SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black gravelly CLAY with frequent cobbles and infrequent boulders	3.00	48.03		
3		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				N = 40 (3, 5, 11, 11, 10, 8)
4	4.50								4.50	46.53		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly cobbly CLAY				N = 72 (4, 15, 17, 18, 18, 19)
5	6.00								6.00	45.03		
6		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				N = 44 (5, 7, 9, 9, 12, 14)
7	7.50											
		0	0	0								N = 36 (4, 6, 7, 9, 9, 11)
8	9.00								9.00	42.03		
9		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black CLAY				N = 34 (5, 6, 6, 8, 9, 11)

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC02**
SHEET Sheet 2 of 2

CO-ORDINATES 706,873.88 E
773,917.16 N
GROUND LEVEL (mOD) 51.03

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 21/05/2020
DATE COMPLETED 21/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black CLAY *(continued)*	10.50	40.53		N = 29 (4, 5, 5, 7, 8, 9)
11		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				
12	12.00	0	0	0								N = 30 (3, 4, 5, 6, 9, 10)
13	13.50											
14		0	0	0								N = 32 (4, 5, 7, 8, 8, 9)
15	15.00							End of Borehole at 15.00 m	15.00	36.03		N = 38 (4, 6, 9, 9, 9, 11)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC03
SHEET Sheet 1 of 2

CO-ORDINATES 706,764.26 E
773,947.36 N
GROUND LEVEL (mOD) 52.75

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 06/05/2020
DATE COMPLETED 08/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY M. Newland
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black gravelly CLAY with frequent cobbles and infrequent boulders				
1	1.50	0	0	0								
2		0	0	0								
3	3.00	0	0	0								
4	4.50	0	0	0								
5		0	0	0								
6	6.00	0	0	0								N = 50/5 mm (25, 10, 50)
7	7.50	0	0	0								N = 50/5 mm (25, 20, 50)
8	9.00	0	0	0					9.00	43.75		
9		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark brown to black gravelly CLAY with frequent cobbles and infrequent boulders				N = 110 (4, 7, 11, 16, 23, 60)

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
8.40	8.40				Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC03**
SHEET Sheet 2 of 2

CO-ORDINATES 706,764.26 E
773,947.36 N
GROUND LEVEL (mOD) 52.75

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 06/05/2020
DATE COMPLETED 08/05/2020
DRILLED BY M. Newland
LOGGED BY L. Daniels

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark brown to black gravelly CLAY with frequent cobbles and infrequent boulders *(continued)*				N = 53/225 mm (5, 6, 11, 16, 21, 5)
11		0	0	0								
12	12.00	0	0	0								N = 90 (5, 14, 17, 24, 9, 40)
13	13.50								13.50	39.25		
14		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black gravelly CLAY with frequent cobbles and infrequent boulders				N = 80 (6, 15, 15, 18, 17, 30)
15	15.00								15.00	37.75		
16								End of Borehole at 15.00 m				N = 75 (7, 14, 15, 17, 18, 25)
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
8.40	8.40				Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-05-20	15.00	15.00	10.55	Water level recorded 10mins after end of drilling

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC04
SHEET Sheet 1 of 2

CO-ORDINATES 706,857.71 E
773,987.11 N
GROUND LEVEL (mOD) 50.39

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 13/05/2020
DATE COMPLETED 14/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY M. Newland
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0												
1	1.50	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of brown CLAY	2.00	48.39		
2		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of brown cobbly CLAY	2.60	47.79		
3	3.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark blueish grey to black gravelly CLAY with frequent cobbles and infrequent boulders				
4	4.50	0	0	0								
5		0	0	0								
6	6.00	0	0	0					6.50	43.89		N = 48 (5, 5, 8, 7, 19, 14)
7	7.50	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of BOULDER	7.50	42.89		
8		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark brown to black gravelly CLAY with frequent cobbles and infrequent boulders				N = 44/230 mm (6, 7, 7, 10, 17, 10)
9	9.00	0	0	0								N = 51/205 mm (4, 6, 6, 11, 34)

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
12.60	12.60				Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
14-05-20	15.00	1.00	15.00	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC04
SHEET Sheet 2 of 2

CO-ORDINATES 706,857.71 E
773,987.11 N
GROUND LEVEL (mOD) 50.39

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 13/05/2020
DATE COMPLETED 14/05/2020
DRILLED BY M. Newland
LOGGED BY L. Daniels

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark brown to black gravelly CLAY with frequent cobbles and infrequent boulders *(continued)*				N = 50/235 mm (7, 7, 8, 14, 12, 16)
11		0	0	0								
12	12.00	0	0	0								N = 50/210 mm (6, 17, 18, 15, 17)
13	13.50											
14		0	0	0								N = 26 (4, 5, 5, 5, 5, 11)
15	15.00							End of Borehole at 15.00 m	15.00	35.39		N = 47 (5, 5, 12, 10, 13, 12)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
12.60	12.60				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
14-05-20	15.00	1.00	15.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC05**
SHEET Sheet 1 of 2

CO-ORDINATES 706,598.43 E
773,981.70 N
GROUND LEVEL (mOD) 55.69

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 20/05/2020
DATE COMPLETED 20/05/2020
DRILLED BY A. Kogut
LOGGED BY D.O'Shea

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH05				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00											
3		0	0	0								
4												
	4.50											
5		0	0	0					5.20	50.49		
								SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles and boulders				
	6.00											N = 35 (2, 6, 9, 10, 8, 8)
6		0	0	0								
7												
	7.50								7.50	48.19		
								SYMMETRIX DRILLING: No recovery; observed by driller as returns of GRAVEL				N = 15 (1, 2, 2, 3, 4, 6)
8		0	0	0								
	9.00								9.00	46.69		
9								SYMMETRIX DRILLING: No recovery; observed by driller as returns of cobbly GRAVEL				N = 23 (2, 3, 4, 6, 6, 7)
		0	0	0								

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.40	2.40				Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
20-05-20	15.00	1.00	15.00	50mm SP

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC05**
SHEET Sheet 2 of 2

CO-ORDINATES 706,598.43 E
773,981.70 N
GROUND LEVEL (mOD) 55.69

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 20/05/2020
DATE COMPLETED 20/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of cobbly GRAVEL *(continued)*	10.50	45.19		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles and boulders				N = 36 (4, 6, 7, 10, 9, 10)
12		0	0	0								N = 34 (5, 7, 8, 8, 9, 9)
13	13.50								13.50	42.19		
14	15.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY	15.00	40.69		N = 32 (4, 8, 7, 9, 8, 8)
15								End of Borehole at 15.00 m				N = 41 (3, 7, 9, 10, 11, 11)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
2.40	2.40				Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
20-05-20	15.00	1.00	15.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC06**
SHEET Sheet 1 of 2

CO-ORDINATES 706,772.96 E
774,017.19 N
GROUND LEVEL (mOD) 51.87

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 08/05/2020
DATE COMPLETED 12/05/2020
DRILLED BY M. Newland
LOGGED BY L. Daniels

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH06				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00											
3		0	0	0								
4												
	4.50								4.50	47.37		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black slightly gravelly CLAY with frequent cobbles and boulders	5.00	46.87		
5								SYMMETRIX DRILLING: No recovery; observed by driller as returns of ard dark grey to black gravelly CLAY with frequent cobbles and infrequent boulders				
	6.00											N = 39 (3, 4, 8, 9, 10, 12)
6		0	0	0								
7												
	7.50											N = 60 (5, 15, 11, 24, 15, 10)
8		0	0	0								
	9.00											N = 65 (6, 14, 14, 17, 19, 15)
9		0	0	0								

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
8.70	8.70				Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC06**
SHEET Sheet 2 of 2

CO-ORDINATES 706,772.96 E
774,017.19 N
GROUND LEVEL (mOD) 51.87

RIG TYPE GEO-205
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 08/05/2020
DATE COMPLETED 12/05/2020
DRILLED BY M. Newland
LOGGED BY L. Daniels

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of ard dark grey to black gravelly CLAY with frequent cobbles and infrequent boulders *(continued)*				N = 60/230 mm (5, 12, 13, 15, 17, 15)
11		0	0	0								
12	12.00	0	0	0								N = 43/235 mm (6, 12, 11, 12, 10, 10)
13	13.50											
14		0	0	0								N = 50/235 mm (7, 11, 11, 13, 12, 14)
15	15.00							End of Borehole at 15.00 m	15.00	36.87		N = 50/230 mm (6, 12, 12, 13, 14, 11)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
8.70	8.70				Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC07**
SHEET Sheet 1 of 2

CO-ORDINATES 706,874.56 E
774,088.95 N
GROUND LEVEL (mOD) 49.59

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 20/05/2020
DATE COMPLETED 21/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY D. Hunston
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH07				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00											
3		0	0	0					3.50	46.09		
4	4.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				N = 40 (4, 4, 7, 12, 8, 13)
5		0	0	0								
	6.00											N = 89 (3, 8, 13, 20, 27, 29)
6		0	0	0								
7	7.50											N = 140 (11, 17, 24, 31, 40, 45)
		0	0	0					7.90	41.69		
8								SYMMETRIX DRILLING: No recovery; observed by driller as returns of grey/brown/black silty clayey sandy GRAVEL				N = 72 (5, 17, 16, 14, 15, 27)
	9.00								9.10	40.49		
9		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey/brown gravelly CLAY				

REMARKS

Hole cased 0.00-15.10m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
8.40	8.40	9.20			Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
21-05-20	15.10	1.00	15.10	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC07
SHEET Sheet 2 of 2

CO-ORDINATES 706,874.56 E
774,088.95 N
GROUND LEVEL (mOD) 49.59

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 20/05/2020
DATE COMPLETED 21/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY D. Hunston
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10								SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey/brown gravelly CLAY *(continued)*				N = 103/190 mm (7, 14, 29, 34, 40)
	10.50											
11		0	0	0					11.30	38.29		
								SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				N = 55/150 mm (41, 40, 15)
	12.00											
12		0	0	0								
13												N = 50/25 mm (25, 50)
	13.50											
14		0	0	0								
												N = 50/10 mm (40, 50)
15	15.10								15.10	34.49		N = 50/15 mm (40, 50)
								End of Borehole at 15.10 m				
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.10m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
8.40	8.40	9.20			Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
21-05-20	15.10	1.00	15.10	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC08**
SHEET Sheet 1 of 2

CO-ORDINATES 706,757.15 E
774,074.21 N
GROUND LEVEL (mOD) 51.99

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 14/05/2020
DATE COMPLETED 19/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY D. Hunston
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0												
1		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff light brown slightly gravelly CLAY				
	1.50											
2		0	0	0					2.50	49.49		
	3.00							SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey gravelly CLAY with occasional cobbles and boulders				
3		0	0	0								
4	4.50								4.50	47.49		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark brown gravelly CLAY with occasional cobbles and boulders				N = 52/225 mm (5, 12, 12, 16, 18, 6)
5												
	6.00											
6		0	0	0								N = 50 (7, 12, 12, 11, 13, 14)
7												
	7.50											
8		0	0	0								N = 44/225 mm (4, 9, 8, 9, 11, 16)
	9.00											
9		0	0	0								N = 50/230 mm (5, 5, 11, 13, 17, 9)

REMARKS

Hole cased 0.00-15.10m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
7.20	7.20				Seepage

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-20	15.10	1.00	15.10	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC08**
SHEET Sheet 2 of 2

CO-ORDINATES 706,757.15 E
774,074.21 N
GROUND LEVEL (mOD) 51.99

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 14/05/2020
DATE COMPLETED 19/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY D. Hunston
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50								10.50	41.49		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark brown gravelly CLAY.				N = 50/45 mm (6, 10, 50)
12	13.50	0	0	0								N = 50/30 mm (11, 18, 50)
13	15.10	0	0	0								N = 25/75 mm (27, 25)
14												
15								End of Borehole at 15.10 m	15.10	36.89		N = 50/25 mm (30, 50)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.10m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
7.20	7.20				Seepage

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-20	15.10	1.00	15.10	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
19-05-20	15.10	15.10	14.50	Water level recorded 10mins after end of drilling

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC09**
SHEET Sheet 1 of 2

CO-ORDINATES 706,645.55 E
774,050.06 N
GROUND LEVEL (mOD) 54.21

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 21/05/2020
DATE COMPLETED 21/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH09				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00											
3		0	0	0								
4												
	4.50											
5		0	0	0								
	6.00											
6									6.20	48.01		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of dense sandy GRAVEL				
7	7.50											N = 29 (4, 5, 5, 6, 8, 10)
8		0	0	0								
	9.00								9.00	45.21		
9		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff brown slightly gravelly CLAY				N = 71 (9, 14, 14, 15, 20, 22)

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC09**
SHEET Sheet 2 of 2

CO-ORDINATES 706,645.55 E
774,050.06 N
GROUND LEVEL (mOD) 54.21

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 21/05/2020
DATE COMPLETED 21/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff brown slightly gravelly CLAY *(continued)*	10.50	43.71		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of dense GRAVEL	12.00	42.21		N = 27 (3, 4, 6, 7, 7, 7)
12	13.50	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey gravelly CLAY	13.50	40.71		N = 24 (2, 3, 5, 6, 6, 7)
14	15.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey cobbly CLAY	15.00	39.21		N = 48 (4, 7, 8, 11, 14, 15)
15								End of Borehole at 15.00 m				N = 46 (5, 6, 9, 11, 12, 14)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC10**
SHEET Sheet 1 of 3

CO-ORDINATES 706,647.00 E
774,104.22 N
GROUND LEVEL (mOD) 53.49

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 07/05/2020
DATE COMPLETED 11/05/2020
DRILLED BY A. Kogut
LOGGED BY L. Daniels

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH10				
1	1.50	0	0	0								
2		0	0	0					2.50	50.99		
3	3.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black slightly gravelly CLAY with frequent cobbles and boulders				N = 18 (1, 2, 3, 7, 5, 3)
4	4.50	0	0	0								N = 26 (3, 4, 5, 6, 6, 9)
5									6.00	47.49		
6	6.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black slightly gravelly CLAY with frequent cobbles and infrequent boulders				N = 36 (4, 5, 5, 6, 10, 15)
7	7.50	0	0	0					7.50	45.99		
8		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black slightly gravelly CLAY with frequent cobbles and boulders				N = 25 (3, 4, 5, 6, 6, 8)
9	9.00	0	0	0								N = 109 (6, 14, 23, 22, 28, 36)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC10**
SHEET Sheet 2 of 3

CO-ORDINATES 706,647.00 E
774,104.22 N
GROUND LEVEL (mOD) 53.49

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 07/05/2020
DATE COMPLETED 11/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50								10.50	42.99		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff to hard dark grey to black gravelly CLAY with frequent cobbles				N = 62 (5, 10, 14, 15, 17, 16)
12	13.50	0	0	0								N = 40 (3, 7, 11, 10, 9, 10)
14	15.00	0	0	0								N = 27 (2, 4, 7, 6, 6, 8)
15	16.50	0	0	0								N = 31 (5, 6, 7, 9, 8, 7)
17	18.00	0	0	0								N = 17 (1, 3, 3, 4, 5, 5)
18	19.50	0	0	0								N = 18 (3, 4, 4, 4, 5, 5)
19	20.00	0	0	0					20.00	33.49		N = 17 (2, 3, 4, 4, 4, 5)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

End of Borehole at 20.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC10**
SHEET Sheet 3 of 3

CO-ORDINATES 706,647.00 E
774,104.22 N
GROUND LEVEL (mOD) 53.49

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 07/05/2020
DATE COMPLETED 11/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20												N = 33 (4, 7, 9, 11, 6, 7)
21												
22												
23												
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC11**
SHEET Sheet 1 of 2

CO-ORDINATES 706,507.56 E
774,058.12 N
GROUND LEVEL (mOD) 56.28

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 19/05/2020
DATE COMPLETED 19/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH11				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00											
3		0	0	0					3.50	52.78		
4	4.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark brown gravelly CLAY with occasional cobbles and boulders	4.50	51.78		
5		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark brown cobbly CLAY				N = 54 (5, 7, 10, 11, 19, 14)
	6.00								6.00	50.28		
6		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of dark brown cobbly GRAVEL				N = 37 (4, 6, 7, 10, 9, 11)
7	7.50								7.50	48.78		
8		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey gravelly CLAY with occasional cobbles and boulders				N = 34 (3, 5, 6, 7, 9, 12)
	9.00								9.00	47.28		
9		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of dense sandy GRAVEL				N = 64 (6, 10, 12, 14, 17, 21)

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-20	15.00	1.00	15.00	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC11**
SHEET Sheet 2 of 2

CO-ORDINATES 706,507.56 E
774,058.12 N
GROUND LEVEL (mOD) 56.28

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 19/05/2020
DATE COMPLETED 19/05/2020
DRILLED BY A. Kogut
LOGGED BY D.O'Shea

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of dense sandy GRAVEL *(continued)*	10.50	45.78		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey gravelly CLAY				N = 28 (3, 4, 6, 6, 8, 8)
12	13.50	0	0	0								N = 35 (4, 6, 7, 8, 9, 11)
13	15.00	0	0	0								N = 58 (6, 9, 12, 17, 14, 15)
14									15.00	41.28		
15								End of Borehole at 15.00 m				N = 38 (5, 7, 8, 9, 10, 11)
16												
17												
18												
19												

REMARKS

Hole cased 0.00-15.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
19-05-20	15.00	1.00	15.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC12
SHEET Sheet 1 of 3

CO-ORDINATES 706,580.97 E, 774,172.32 N
GROUND LEVEL (mOD) 52.79

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 13/05/2020
DATE COMPLETED 13/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH12				
1		0	0	0								
	1.50											
2		0	0	0								
	3.00								3.10	49.69		
3		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles and boulders				
4	4.50											N = 87 (7, 14, 22, 18, 20, 27)
5		0	0	0								
	6.00								6.00	46.79		
6		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				N = 41 (3, 4, 6, 10, 12, 13)
7	7.50								7.50	45.29		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles and boulders				N = 65 (4, 7, 11, 14, 19, 21)
8	9.00											
9		0	0	0								N = 52 (2, 6, 8, 10, 17, 17)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC12**
SHEET Sheet 2 of 3

CO-ORDINATES 706,580.97 E
774,172.32 N
GROUND LEVEL (mOD) 52.79

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 13/05/2020
DATE COMPLETED 13/05/2020
DRILLED BY A. Kogut
LOGGED BY L. Daniels

CLIENT
ENGINEER CSEA

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50								10.50	42.29		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY				N = 54 (3, 6, 9, 11, 15, 19)
12	13.50	0	0	0								N = 61 (4, 7, 12, 13, 18, 18)
14	15.00	0	0	0								N = 34 (5, 9, 6, 7, 10, 11)
15	16.50	0	0	0								N = 33 (4, 5, 7, 9, 8, 9)
17	18.00	0	0	0								N = 67 (2, 4, 9, 16, 19, 23)
18	19.50	0	0	0								N = 47 (3, 6, 11, 10, 12, 14)
19	20.00	0	0	0					20.00	32.79		N = 34 (4, 5, 5, 8, 9, 12)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

End of Borehole at 20.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC12
SHEET Sheet 3 of 3

CO-ORDINATES 706,580.97 E
774,172.32 N
GROUND LEVEL (mOD) 52.79

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 13/05/2020
DATE COMPLETED 13/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20												N = 58 (3, 4, 9, 12, 18, 19)
21												
22												
23												
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC13**
SHEET Sheet 1 of 3

CO-ORDINATES 706,623.20 E
774,168.70 N
GROUND LEVEL (mOD) 52.41

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 11/05/2020
DATE COMPLETED 12/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH13				
1	1.50	0	0	0								
2		0	0	0								
3	3.00	0	0	0								
4	4.50	0	0	0								
5		0	0	0					5.50	46.91		
6	6.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black slightly gravelly CLAY with frequent cobbles and infrequent boulders				N = 59 (5, 9, 9, 14, 15, 21)
7	7.50	0	0	0								N = 73 (7, 12, 15, 15, 19, 24)
8		0	0	0								
9	9.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles	9.00	43.41		N = 67 (6, 11, 12, 19, 17, 19)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-05-20	20.00	1.00	20.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC13**
SHEET Sheet 2 of 3

CO-ORDINATES 706,623.20 E
774,168.70 N
GROUND LEVEL (mOD) 52.41

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 11/05/2020
DATE COMPLETED 12/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles *(continued)*				N = 19 (2, 3, 3, 4, 6, 6)
11	12.00	0	0	0					12.00	40.41		
12	13.50	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff to hard dark grey to black sandy gravelly CLAY with frequent cobbles	13.50	38.91		N = 19 (3, 4, 4, 4, 6, 5)
13	15.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of hard dark grey to black slightly gravelly CLAY with frequent cobbles	15.00	37.41		N = 39 (4, 6, 9, 9, 11, 10)
14	16.50	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey to black gravelly CLAY with frequent cobbles				N = 48 (3, 7, 6, 10, 14, 18)
15	18.00	0	0	0								N = 26 (2, 4, 7, 5, 7, 7)
16	19.50	0	0	0								N = 26 (4, 5, 6, 7, 6, 7)
17	20.00	0	0	0					20.00	32.41		N = 25 (3, 5, 5, 6, 7, 7)
18												
19												
20												

REMARKS
Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

End of Borehole at 20.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-05-20	20.00	1.00	20.00	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC13
SHEET Sheet 3 of 3

CO-ORDINATES 706,623.20 E
774,168.70 N
GROUND LEVEL (mOD) 52.41

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 11/05/2020
DATE COMPLETED 12/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY L. Daniels

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20												N = 16 (3, 4, 4, 4, 3, 5)
21												
22												
23												
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
12-05-20	20.00	1.00	20.00	50mm SP

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC14**
SHEET Sheet 1 of 3

CO-ORDINATES 706,503.44 E
774,203.55 N
GROUND LEVEL (mOD) 53.82

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 18/05/2020
DATE COMPLETED 18/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH14				
1	1.50	0	0	0								
2		0	0	0								
3	3.00								3.10	50.72		
4		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey gravelly CLAY with occasional cobbles and boulders				
5	4.50	0	0	0								N = 57 (3, 8, 10, 14, 17, 16)
6	6.00								6.00	47.82		
7		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey gravelly CLAY				N = 54 (7, 9, 12, 14, 14, 14)
8	7.50	0	0	0								N = 71 (5, 12, 17, 18, 17, 19)
9	9.00								9.00	44.82		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey gravelly CLAY with occasional cobbles and boulders				N = 33 (3, 9, 8, 9, 8, 8)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
18-05-20	20.00	1.00	20.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO RC14
SHEET Sheet 2 of 3

CO-ORDINATES 706,503.44 E, 774,203.55 N
GROUND LEVEL (mOD) 53.82

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 18/05/2020
DATE COMPLETED 18/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50								10.50	43.32		
11	12.00	0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey gravelly CLAY				N = 30 (4, 5, 8, 7, 7, 8)
12	13.50	0	0	0								N = 35 (5, 7, 4, 10, 10, 11)
13	15.00	0	0	0								N = 31 (4, 6, 6, 7, 9, 9)
14	16.50	0	0	0								N = 32 (3, 5, 7, 8, 8, 9)
15	18.00	0	0	0								N = 42 (4, 9, 8, 9, 11, 14)
16	19.50	0	0	0								N = 31 (4, 6, 7, 7, 8, 9)
17	20.00	0	0	0					20.00	33.82		N = 34 (3, 5, 8, 9, 8, 9)
18												
19												
20												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

End of Borehole at 20.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
18-05-20	20.00	1.00	20.00	50mm SP

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC14**
SHEET Sheet 3 of 3

CO-ORDINATES 706,503.44 E
774,203.55 N
GROUND LEVEL (mOD) 53.82

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 18/05/2020
DATE COMPLETED 18/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20												N = 30 (3, 4, 7, 7, 8, 8)
21												
22												
23												
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
18-05-20	20.00	1.00	20.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC15**
SHEET Sheet 1 of 3

CO-ORDINATES 706,410.90 E
774,166.14 N
GROUND LEVEL (mOD) 55.03

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 14/05/2020
DATE COMPLETED 14/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								Hole opened by Shell & Auger - please see log BH15				
1	1.50	0	0	0								
2		0	0	0								
3	3.00								3.20	51.83		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of very stiff dark grey gravelly CLAY with occasional cobbles and boulders				
4	4.50											N = 56 (5, 14, 15, 18, 12, 11)
5		0	0	0								
6	6.00											N = 50 (6, 10, 12, 10, 14, 14)
		0	0	0								
7	7.50								7.50	47.53		
		0	0	0				SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey gravelly CLAY				N = 53 (4, 8, 11, 14, 13, 15)
8												
9	9.00											N = 55 (3, 6, 10, 12, 15, 18)
		0	0	0								

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
14-05-20	20.00	1.00	20.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC15**
SHEET Sheet 2 of 3

CO-ORDINATES 706,410.90 E
774,166.14 N
GROUND LEVEL (mOD) 55.03

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 14/05/2020
DATE COMPLETED 14/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10	10.50							SYMMETRIX DRILLING: No recovery; observed by driller as returns of stiff grey gravelly CLAY *(continued)*				N = 43 (2, 4, 7, 9, 12, 15)
11		0	0	0								
12	12.00	0	0	0								N = 58 (4, 5, 7, 10, 12, 29)
13	13.50	0	0	0								N = 40 (5, 8, 7, 9, 10, 14)
14		0	0	0								
15	15.00	0	0	0								N = 33 (4, 4, 6, 7, 9, 11)
16	16.50	0	0	0								N = 29 (3, 5, 5, 6, 8, 10)
17		0	0	0								
18	18.00	0	0	0								N = 29 (4, 6, 7, 7, 7, 8)
19	19.50	0	0	0								
20	20.00	0	0	0					20.00	35.03		N = 40 (5, 6, 6, 9, 11, 14)

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

End of Borehole at 20.00 m

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
14-05-20	20.00	1.00	20.00	50mm SP

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 22473

CONTRACT Drogheda IDA, Drogheda, Co. Meath

DRILLHOLE NO **RC15**
SHEET Sheet 3 of 3

CO-ORDINATES 706,410.90 E
774,166.14 N
GROUND LEVEL (mOD) 55.03

RIG TYPE GEO-405
FLUSH Air/Mist
INCLINATION (deg) -90
CORE DIAMETER (mm) 80

DATE COMMENCED 14/05/2020
DATE COMPLETED 14/05/2020

CLIENT
ENGINEER CSEA

DRILLED BY A. Kogut
LOGGED BY D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
20												N = 27 (4, 5, 7, 5, 7, 8)
21												
22												
23												
24												
25												
26												
27												
28												
29												

REMARKS

Hole cased 0.00-20.00m. Erection of Covid19 safe working area - 1 hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
14-05-20	20.00	1.00	20.00	50mm SP

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

IGSL RC FI 10M 22473.GPJ IGSL.GDT 26/5/20

Appendix 3 Trial Pit Records

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP01**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,940.94 E 773,912.26 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	50.35
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	50.20						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand				(Seepage)	AA131858	B	1.00		
1.0									
2.0					AA131859	B	2.00		
End of Trial Pit at 3.00m		3.00	47.35		AA131860	B	3.00		
3.0									
4.0									

Groundwater Conditions
Seepage at 0.80m.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

IGSL TP LOG 22473.GPJ IGSL.GDT 30/3/20

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,783.93 E 773,891.22 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	52.74
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	52.59						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA131867	B	1.00		
1.0									
Stiff brown gravelly CLAY with a high cobble content and a high boulder content (angular, =400mm)		1.80	50.94		AA131868	B	2.00		
2.0									
OBSTRUCTION		2.40	50.34						
End of Trial Pit at 2.50m		2.50	50.24						
3.0									
4.0									

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,664.02 E 773,914.96 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	54.86
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	54.71						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand									
1.0				1 (Seepage)	AA131869	B	1.00		
Stiff brown gravelly CLAY with a high cobble content and a high boulder content (angular, =400mm)		1.20	53.66						
2.0 OBSTRUCTION		2.00	52.86		AA131870	B	2.00		
End of Trial Pit at 2.20m		2.20	52.66						
3.0									
4.0									

Groundwater Conditions
Seepage at 1.20m.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP04**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,831.06 E 773,939.13 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	51.36
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	51.21						
Soft brown slightly gravelly sandy CLAY (possible made ground)		1.00	50.36		AA131864	B	1.00		
1.0 Soft to firm brown slightly gravelly Sandy CLAY		1.50	49.86						
Firm brown mottled grey slightly gravelly very sandy CLAY					AA131865	B	2.00		
2.0		2.20	49.16						
Firm grey gravelly very sandy CLAY with a low cobble content									
3.0 End of Trial Pit at 3.00m		3.00	48.36		AA131866	B	3.00		
4.0									

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

IGSL TP LOG 22473.GPJ IGSL.GDT 30/3/20

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP05**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,696.63 E 773,943.37 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	54.05
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.15	53.90						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA131873	B	1.00		
					AA131874	B	2.00		
Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		2.20	51.85						
OBSTRUCTION		2.70	51.35						
End of Trial Pit at 2.80m		2.80	51.25		AA131875	B	2.80		

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP06**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,682.74 E 773,991.71 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	54.04
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.15	53.89						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand				1 (Seepage)					
					AA131871	B	1.00		
Stiff brown gravelly CLAY with a high cobble content and a high boulder content (angular, =400mm)		1.40	52.64						
					AA131872	B	2.00		
OBSTRUCTION		2.40	51.64						
End of Trial Pit at 2.50m		2.50	51.54						

Groundwater Conditions
Seepage at 0.60m.

Stability
Wall collapse from 0.30m to end of pit.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

IGSL TP LOG 22473.GPJ IGSL.GDT 30/3/20

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP07**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,850.81 E 774,032.08 N
		DATE STARTED	18/03/2020
		DATE COMPLETED	18/03/2020
CLIENT		**GROUND LEVEL (m)**	50.58
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	50.43						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA131861	B	1.00		
					AA131862	B	2.00		
Stiff dark brown slightly sandy gravelly CLAY with a medium cobble content		2.80	47.78						
End of Trial Pit at 3.00m		3.00	47.58		AA131863	B	3.00		

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP08**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,881.57 E 774,065.70 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	49.53
		EXCAVATION METHOD	8-Ton Excavator
ENGINEER	CSEA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 Brown gravelly CLAY with infrequent of rubber, plastic, fabric, rope. Medium cobble content (MADE GROUND)									
1.0 Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand		1.00	48.53		AA136853	B	1.00		
2.0 Stiff brown gravelly very sandy CLAY with a medium cobble content and a low boulder content (angular, =400mm)		2.20	47.33						
		2.40	47.13						
OBSTRUCTION		2.50	47.03		AA136854	B	2.50		
End of Trial Pit at 2.50m									
3.0									
4.0									

Groundwater Conditions
None observed.

Stability
Wall collapse from 0.00m to 1.00m.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP09**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,750.66 E 774,042.01 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	52.28
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	52.13						
Soft brown slightly gravelly CLAY with rootlets		0.60	51.68						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA131876	B	1.00		
2.0 Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		2.10	50.18		AA131877	B	2.50		
3.0 End of Trial Pit at 3.00m		3.00	49.28						
4.0									

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP10**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,586.98 E 774,035.55 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	55.48
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.10	55.38						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand									
		0.60	54.88						
Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)					AA131890	B	1.00		
		2.40	53.08						
OBSTRUCTION		2.50	52.98						
End of Trial Pit at 2.50m					AA131891	B	2.50		

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP11**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,597.12 E 774,096.54 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	54.48
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	54.33						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand									
1.0 Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		1.10	53.38		AA131888	B	1.00		
					AA131889	B	2.50		
3.0 End of Trial Pit at 3.00m		3.00	51.48						
4.0									

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP12**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,733.41 E 774,139.76 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	51.52
		EXCAVATION METHOD	8-Ton Excavator
ENGINEER	CSEA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL									
Soft brown slightly gravelly CLAY with rootlets		0.15	51.37						
1.0 Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand		1.00	50.52	1 (Seepage)	AA131883	B	1.00		
2.0					AA131884	B	2.00		
Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		2.20	49.32						
3.0 End of Trial Pit at 3.00m		3.00	48.52		AA131885	B	3.00		
4.0									

Groundwater Conditions
Seepage at 1.00m.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP13**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,661.82 E 774,119.90 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	53.03
		EXCAVATION METHOD	8-Ton Excavator
ENGINEER	CSEA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	52.93						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand				1 (Seepage)	AA131886	B	1.00		
1.80		1.80	51.23						
Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)					AA131887	B	2.50		
3.00 End of Trial Pit at 3.00m		3.00	50.03						
4.0									

Groundwater Conditions
Seepage at 1.30m.

Stability
Wall collapse from 0.80m to end of pit.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP14**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,832.61 E 774,139.20 N
		DATE STARTED	19/03/2020
		DATE COMPLETED	19/03/2020
CLIENT		**GROUND LEVEL (m)**	50.14
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.15	49.99						
Brown slightly gravelly CLAY with infrequent ceramic, plastic fragments (MADE GROUND)					AA131878	B	0.50		
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand		0.80	49.34		AA131879	B	1.00		
Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		1.60	48.54		AA131880	B	2.00		
End of Trial Pit at 3.00m		3.00	47.14		AA131881	B	3.00		

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP15**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,566.36 E 774,198.01 N
		DATE STARTED	20/03/2020
		DATE COMPLETED	20/03/2020
CLIENT		**GROUND LEVEL (m)**	52.89
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	52.79						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA136851	B	1.00		
1.0									
Stiff brown gravelly very sandy CLAY with a medium cobble content and a low boulder content (angular, =400mm)		1.40	51.49	1 (Seepage)					
2.0									
OBSTRUCTION		2.50	50.39		AA136852	B	2.50		
End of Trial Pit at 2.60m		2.60	50.29						
3.0									
4.0									

Groundwater Conditions
Seepage at 1.50m.

Stability
Wall collapse from 1.40m to end of pit.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP16**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,488.67 E 774,138.87 N
		DATE STARTED	20/03/2020
		DATE COMPLETED	20/03/2020
CLIENT		**GROUND LEVEL (m)**	54.75
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand		0.00	54.75						
				1 (Seepage)	AA131892	B	1.00		
Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		1.80	52.95						
OBSTRUCTION		2.30	52.45						
End of Trial Pit at 2.50m		2.50	52.25		AA131893	B	2.50		

Groundwater Conditions
Seepage at 1.00m.

Stability
Wall collapse from 1.00m to end of pit.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP17**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,402.61 E 774,168.91 N
		DATE STARTED	20/03/2020
		DATE COMPLETED	20/03/2020
CLIENT		**GROUND LEVEL (m)**	55.15
		EXCAVATION METHOD	8-Ton Excavator
ENGINEER	CSEA		

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	55.05						
Brown slightly gravelly CLAY with a medium cobble content and a medium boulder content (angular, =400mm) (possible MADE GROUND)				1 (Seepage)	AA131894	B	0.80		
1.0 Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand		1.30	53.85		AA131895	B	1.50		
2.0 Stiff brown gravelly CLAY with a medium cobble content and a low boulder content (angular, =400mm)		2.00	53.15		AA131896	B	2.50		
3.0 End of Trial Pit at 3.00m		3.00	52.15						
4.0									

Groundwater Conditions
Seepage at 0.50m.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP18**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,424.87 E 774,247.76 N
		DATE STARTED	20/03/2020
		DATE COMPLETED	20/03/2020
CLIENT		**GROUND LEVEL (m)**	53.96
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL		0.10	53.86						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA131897	B	1.00		
1.0									
Stiff brown gravelly very sandy CLAY with a medium cobble content and a low boulder content (angular, =400mm)		1.60	52.36						
2.0					AA131898	B	2.50		
End of Trial Pit at 3.00m		3.00	50.96						
3.0									
4.0									

Groundwater Conditions
None observed.

Stability
Stable.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

TRIAL PIT RECORD

REPORT NUMBER 22473

CONTRACT	Drogheda IDA, Drogheda, Co. Meath	**TRIAL PIT NO.**	**TP19**
		SHEET	Sheet 1 of 1
LOGGED BY	L. Daniels	**CO-ORDINATES**	706,541.16 E 774,240.44 N
		DATE STARTED	20/03/2020
		DATE COMPLETED	20/03/2020
CLIENT		**GROUND LEVEL (m)**	53.13
ENGINEER	CSEA	**EXCAVATION METHOD**	8-Ton Excavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
TOPSOIL		0.10	53.03						
Firm brown mottled grey slightly sandy slightly gravelly CLAY with pockets of grey fine to coarse silty sand					AA131899	B	1.00		
Stiff brown gravelly very sandy CLAY with a medium cobble content and a low boulder content (angular, =400mm)		1.60	51.53	1 (Seepage)					
OBSTRUCTION		2.40	50.73						
End of Trial Pit at 2.50m		2.50	50.63		AA131900	B	2.50		

Groundwater Conditions
Seepage at 1.60m.

Stability
Wall collapse from 1.60m to end of pit.

General Remarks
CAT-scanned location and checked for possible services before beginning excavation.

Appendix 4 Infiltration Test Results

Soakaway Design f -value from field tests (F2C) IGSL

Contract: Drogheda IDA
Contract No. 22473
Test No. SA02
Client CSEA
Date: 23.03.20

Easting	Northing	Elevation
706674	773929	54.477

Summary of ground conditions

from	to	Description	Ground water
0.00	0.15	TOPSOIL	
0.15	2.00	Firm brown sandy gravelly CLAY with cobbles and boulders	None observed

Notes:

Field Data

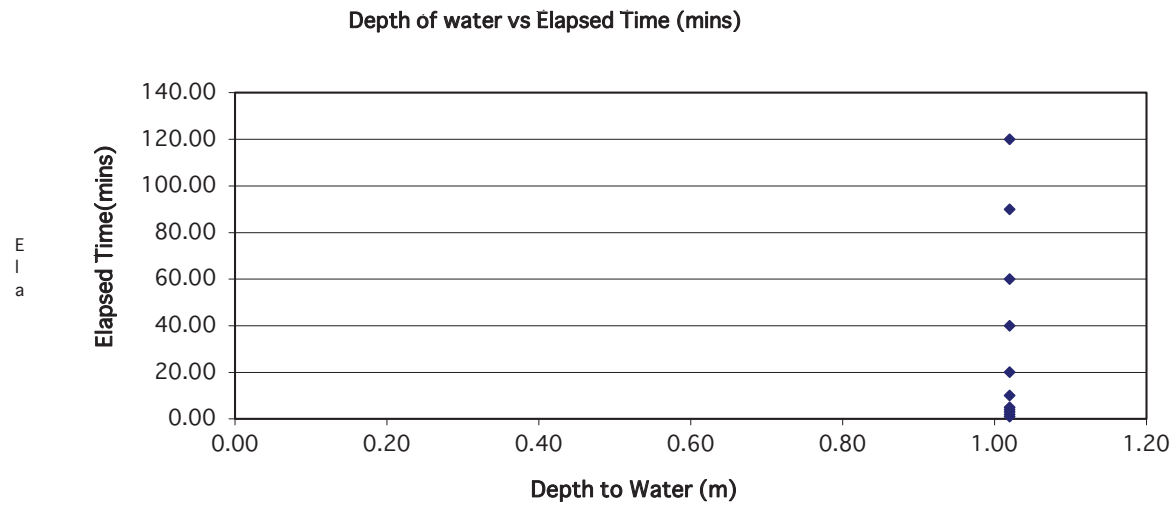
Depth to Water (m)	Elapsed Time (min)
1.02	1.00
1.02	2.00
1.02	3.00
1.02	4.00
1.02	5.00
1.02	10.00
1.02	20.00
1.02	40.00
1.02	60.00
1.02	90.00
1.02	120.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.30	m
Initial depth to Water =	1.02	m
Final depth to water =	1.02	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.65	m2
*Av. side area of permeable stratum over test period=	3.528	m2
Total Exposed area =	4.178	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests

(F2C) IGSL

Contract: Drogheda IDA
Contract No. 22473
Test No. SA02
Client CSEA
Date: 23.03.20

Easting	Northing	Elevation
706552.3	774027	55.93

Summary of ground conditions

from	to	Description	Ground water
0.00	0.15	TOPSOIL	Seepage at 1.60m
0.15	2.00	Soft to firm brown mottled grey sandy gravelly CLAY with cobbles	

Notes:

Field Data

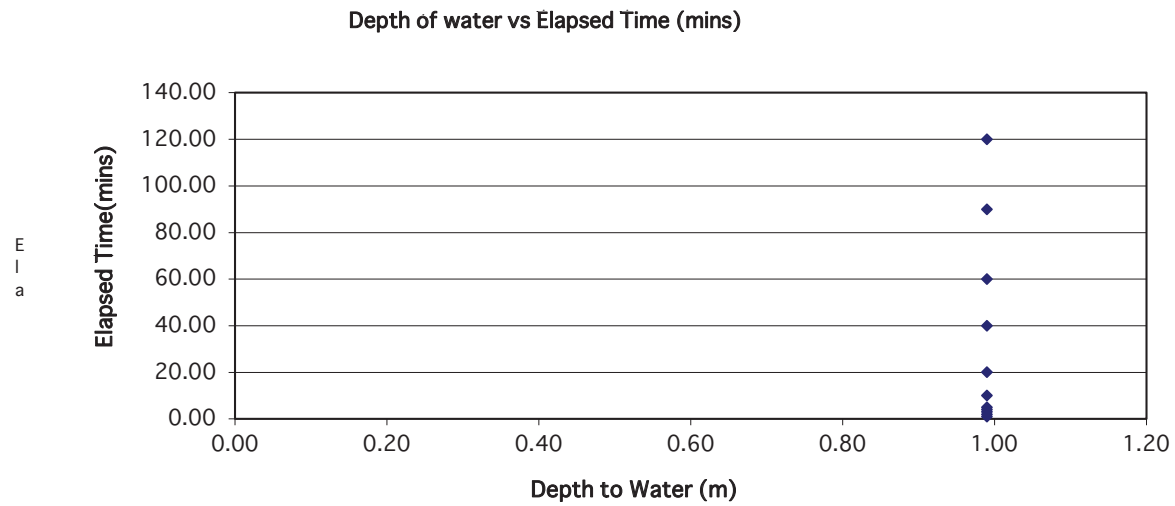
Depth to Water (m)	Elapsed Time (min)
0.99	1.00
0.99	2.00
0.99	3.00
0.99	4.00
0.99	5.00
0.99	10.00
0.99	20.00
0.99	40.00
0.99	60.00
0.99	90.00
0.99	120.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.20	m
Initial depth to Water =	0.99	m
Final depth to water =	0.99	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.6	m2
*Av. side area of permeable stratum over test period=	3.434	m2
Total Exposed area =	4.034	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests

(F2C) IGSL

Contract: Drogheda IDA
Contract No. 22473
Test No. SA03
Client CSEA
Date: 23.03.20

Easting	Northing	Elevation
706454.2	774120	55.19

Summary of ground conditions

from	to	Description	Ground water
0.00	1.00	MADE GROUND comprised of brown gravelly CLAY with cobbles and boulders	None observed
1.00	2.20	Soft to firm brown mottled grey sandy gravelly CLAY with cobbles	

Notes:

Field Data

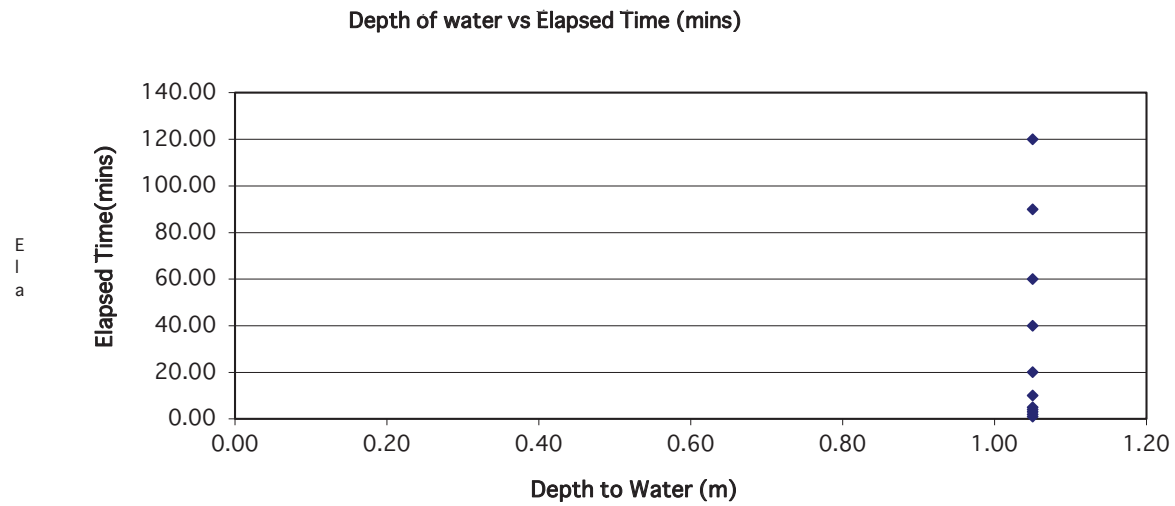
Depth to Water (m)	Elapsed Time (min)
1.05	1.00
1.05	2.00
1.05	3.00
1.05	4.00
1.05	5.00
1.05	10.00
1.05	20.00
1.05	40.00
1.05	60.00
1.05	90.00
1.05	120.00

Field Test

Depth of Pit (D)	2.20	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.40	m
Initial depth to Water =	1.05	m
Final depth to water =	1.05	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.7	m2
*Av. side area of permeable stratum over test period=	4.37	m2
Total Exposed area =	5.07	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests

(F2C) IGSL

Contract: Drogheda IDA
Contract No. 22473
Test No. SA04
Client CSEA
Date: 23.03.20

Easting	Northing	Elevation
706883.4	774061	49.53

Summary of ground conditions

from	to	Description	Ground water
0.00	1.00	MADE GROUND comprised of brown gravelly CLAY with cobbles and boulders	None observed
1.00	2.20	Soft to firm brown mottled grey sandy gravelly CLAY with cobbles	

Notes:

Field Data

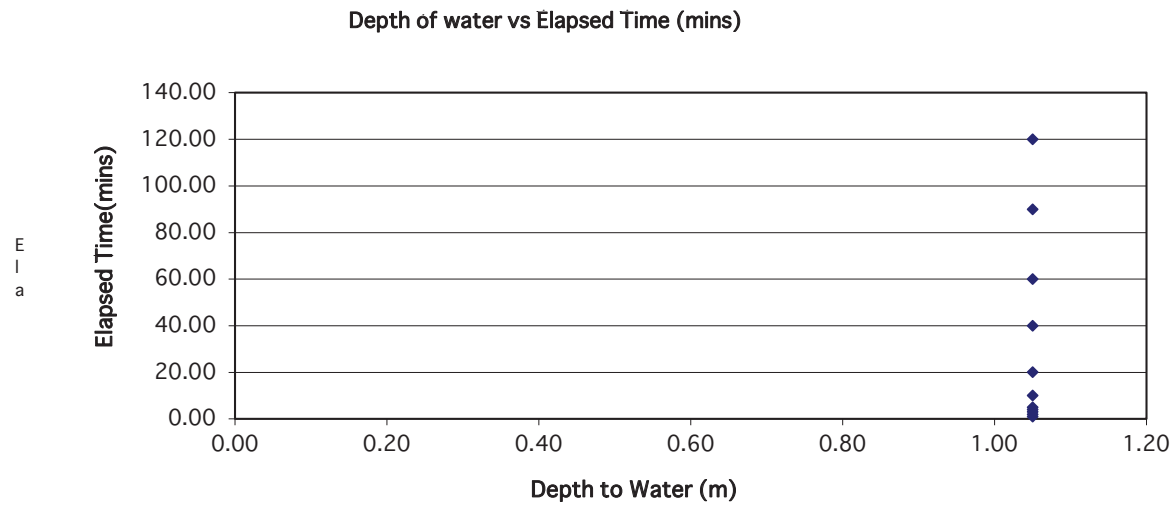
Depth to Water (m)	Elapsed Time (min)
1.05	1.00
1.05	2.00
1.05	3.00
1.05	4.00
1.05	5.00
1.05	10.00
1.05	20.00
1.05	40.00
1.05	60.00
1.05	90.00
1.05	120.00

Field Test

Depth of Pit (D)	2.20	m
Width of Pit (B)	0.50	m
Length of Pit (L)	1.40	m
Initial depth to Water =	1.05	m
Final depth to water =	1.05	m
Elapsed time (mins)=	120.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.7	m2
*Av. side area of permeable stratum over test period=	4.37	m2
Total Exposed area =	5.07	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Appendix 5 Laboratory Test Results (Geotechnical)

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2*, 4.3, 4.4 & 5.3

Report No. **R111288** Contract No. 22473 Contract Name: IDA Business Park Donore Rd Drogheda

Customer CSE

Samples Received: 07/05/20 Date Tested: 08/05/20

BH/TP	Sample No.	Depth (m)	Lab. Ref	Sample Type	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425μm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
TP01	AA131859	1.0	A20/1452	B	29	49	25	24	71	WS	4.4	C I	Brown sandy gravelly CLAY
TP03	AA13869	1.0	A20/1453	B	15	37	16	21	65	WS	4.4	C I	Brown sandy gravelly CLAY
TP04	AA131865	2.0	A20/1454	B	11	30	14	16	52	WS	4.4	C L	Brown sandy gravelly CLAY
TP05	AA131873	1.0	A20/1455	B	11	33	16	17	47	WS	4.4	C L	Brown sandy gravelly CLAY
TP06	AA131872	2.0	A20/1456	B	14	30	16	14	71	WS	4.4	C L	Brown slightly sandy, gravelly, CLAY
TP07	AA131861	1.0	A20/1457	B	19	35	16	19	70	WS	4.4	C L	Brown sandy gravelly CLAY
TP09	AA131876	1.0	A20/1458	B	15	38	18	20	78	WS	4.4	C I	Brown sandy gravelly CLAY
TP09	AA131877	2.0	A20/1459	B	8	35	17	18	75	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP11	AA131888	1.0	A20/1460	B	17	35	17	18	79	WS	4.4	C L	Brown sandy gravelly CLAY
TP11	AA131889	2.5	A20/1461	B	23	34	16	18	79	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
TP13	AA131866	1.0	A20/1462	B	8.8	33	15	18	62	WS	4.4	C L	Brown sandy gravelly CLAY
TP14	AA131880	2.0	A20/1463	B	20	43	19	24	86	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY
TP15	AA131851	1.0	A20/1464	B	20	35	18	17	75	WS	4.4	C L	Brown sandy gravelly CLAY
TP17	AA131859	1.5	A20/1465	B	12	31	16	15	51	WS	4.4	C L	Brown sandy gravelly CLAY
TP18	AA131897	1.0	A20/1466	B	24	43	21	22	77	WS	4.4	C I	Brown sandy gravelly CLAY

Notes:
Preparation: WS - Wet sieved; AR - As received; NP - Non plastic
Liquid Limit Clause: 4.3 Cone Penetrometer definitive method; 4.4 Cone Penetrometer one point method
Sample Type: B - Bulk Disturbed; U - Undisturbed

Remarks:
Results apply to the sample as received.
NOTE: *Clause 3.2 of BS1377 is a "withdrawn" standard due to publication of ISO17892-1:2014
Opinions and interpretations are outside the scope of accreditation.
The results relate to the specimens tested. Any remaining material will be retained for one month.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by | Date: 23/05/20 | Page: 1 of 1

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2*, 4.3, 4.4 & 5.3

Report No. **R111289** Contract No. 22473 Contract Name: IDA Business Park Donore Rd Drogheda

Customer CSE

Samples Received: 07/05/20 Date Tested: 08/05/20

BH/TP	Sample No.	Depth (m)	Lab. Ref	Sample Type	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425μm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
TP19	AA131899	1.0	A20/1468	B	13	35	16	19	59	WS	4.4	C L	Brown sandy gravelly CLAY
BH03	AA135457	2.0	A20/1469	B	14	35	16	19	51	WS	4.4	C L	Brown sandy gravelly CLAY
BH03	AA135460	4.0	A20/1470	B	12	32	14	18	65	WS	4.4	C L	Grey slightly sandy, slightly gravelly, CLAY with many cobbles
BH04	AA13049	4.0	A20/1471	B	12	37	19	18	56	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY with many cobbles
BH06	AA135454	4.0	A20/1472	B	10	34	16	18	52	WS	4.4	C L	Grey slightly sandy, slightly gravelly, CLAY
BH09	AA135471	3.0	A20/1473	B	14	33	15	18	53	WS	4.4	C L	Brown sandy gravelly CLAY
BH09	AA135473	5.0	A20/1474	B	14	30	14	16	47	WS	4.4	C L	Grey slightly sandy, gravelly, CLAY

Notes:
Preparation: WS - Wet sieved; AR - As received; NP - Non plastic
Liquid Limit Clause: 4.3 Cone Penetrometer definitive method; 4.4 Cone Penetrometer one point method
Sample Type: B - Bulk Disturbed; U - Undisturbed

Remarks:
Results apply to the sample as received.
NOTE: *Clause 3.2 of BS1377 is a "withdrawn" standard due to publication of ISO17892-1:2014
Opinions and interpretations are outside the scope of accreditation.
The results relate to the specimens tested. Any remaining material will be retained for one month.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by	Date	Page
H Byrne	23/05/20	1 of 1

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2*, 4.3, 4.4 & 5.3

Report No. **R111528** Contract No. 22473 Contract Name: IDA Business Park , Donore Rd.,Drogheda,Co.Louth

Customer CSE

Samples Received: 22/05/20 Date Tested: 22/05/20

BH/TP	Sample No.	Depth (m)	Lab. Ref	Sample Type	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH02	AA135142	2.0	A20/1661	B	18	34	16	18	73	WS	4.4	C L	Brown sandy slightly gravelly CLAY
BH05	AA135136	1.0	A20/1662	B	19	35	17	18	59	WS	4.4	C L	Brown sandy slightly gravelly CLAY
BH05	AA135139	4.0	A20/1663	B	16	32	15	17	60	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
BH08	AA135133	2.0	A20/1664	B	17	47	21	16	69	WS	4.4	M I	Brown sandy slightly gravelly SILT
BH08A	AA135134	4.0	A20/1665	B	15	34	17	17	13	WS	4.4	C L	Brown slightly sandy, slightly gravelly, CLAY
BH11	AA135124	3.0	A20/1666	B	26	38	16	22	84	WS	4.4	C I	Brown sandy slightly gravelly CLAY
BH12	AA135486	1.0	A20/1667	B	12	36	17	19	24	WS	4.4	C I	Brown sandy slightly gravelly CLAY
BH12	AA135488	3.0	A20/1668	B	6.3	41	18	23	61	WS	4.4	C I	COBBLES with brown clayey, sandy, gravel
BH13	AA135479	1.0	A20/1669	B	24	40	19	21	66	WS	4.4	C I	Brown sandy slightly gravelly CLAY
BH13	AA135483	4.0	A20/1670	B	13	32	NP	NP	65	WS	4.4		Brown silty, gravelly, SAND
BH14	AA135130	3.0	A20/1671	B	18	45	18	27	72	WS	4.4	C I	Brown sandy slightly gravelly CLAY
BH15	AA135127	3.0	A20/1672	B	19	40	17	23	59	WS	4.4	C I	Brown slightly sandy, slightly gravelly, CLAY

Notes:
Preparation: WS - Wet sieved; AR - As received; NP - Non plastic
Liquid Limit Clause: 4.3 Cone Penetrometer definitive method; 4.4 Cone Penetrometer one point method
Sample Type: B - Bulk Disturbed; U - Undisturbed

Remarks:
Results apply to the sample as received.
NOTE: *Clause 3.2 of BS1377 is a "withdrawn" standard due to publication of ISO17892-1:2014
Opinions and interpretations are outside the scope of accreditation.
The results relate to the specimens tested. Any remaining material will be retained for one month.

IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

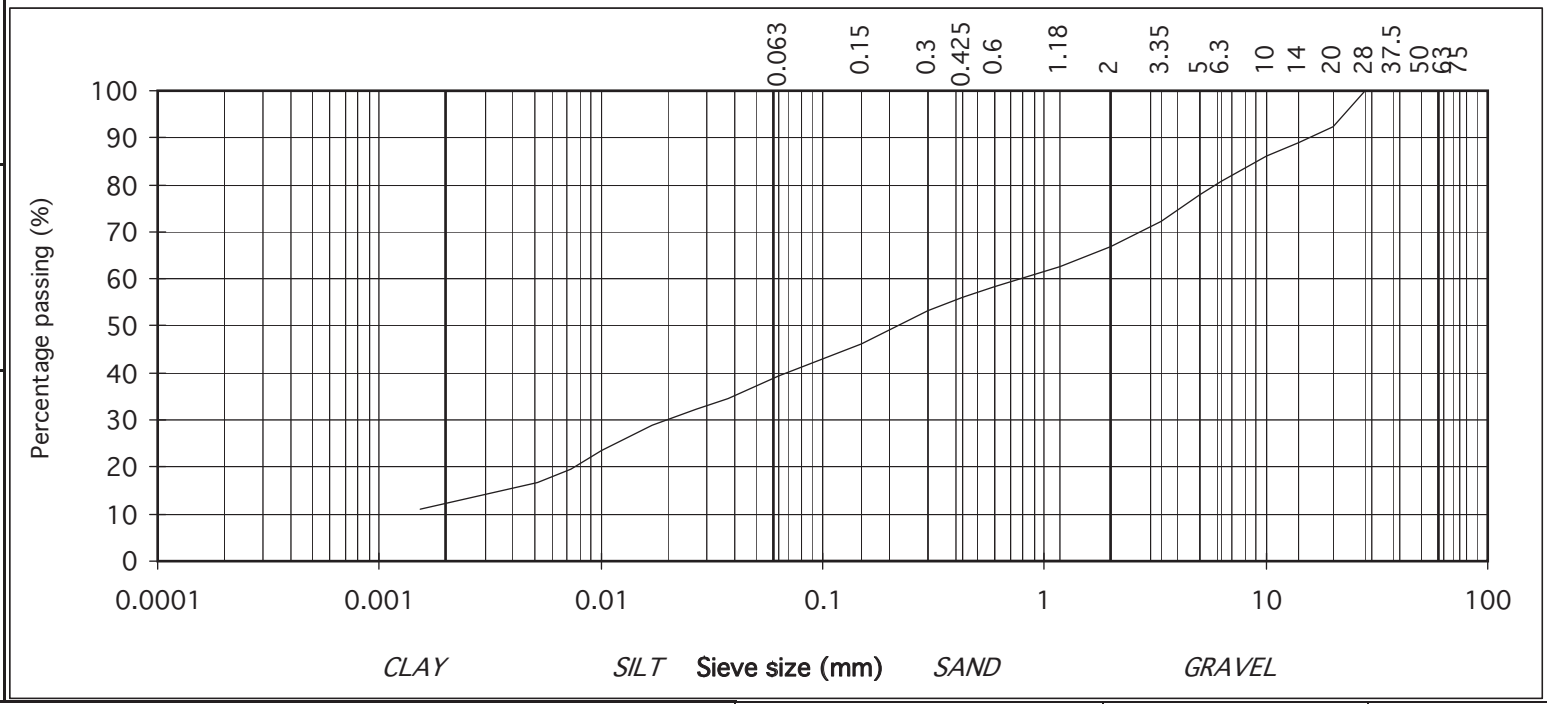
Approved by	Date	Page
H Byrne	05/06/20	1 of 1

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 137T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	92	
14	89	
10	86	
6.3	81	
5	78	
3.35	72	
2	67	
1.18	63	SAND
0.6	58	
0.425	56	
0.3	53	
0.15	46	
0.063	39	SILT/CLAY
0.037	35	
0.027	32	
0.017	29	
0.010	24	
0.007	19	
0.005	17	
0.002	11	

Contract No.	22473	Report No.	R111529
Contract:	IDA Business Park , Donore Rd.,Drogheda , Co.Louth		
BH/TP :	BH05		
Sample No.	AA135139	Lab. Sample No.	A20/1663
Sample Type:	B		
Depth (m)	4.00	Customer:	CSE
Date Received	22/05/2020	Date Testing started	22/05/2020
Description:	Brown slightly sandy, slightly gravelly, CLAY		
Remarks	Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.		



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

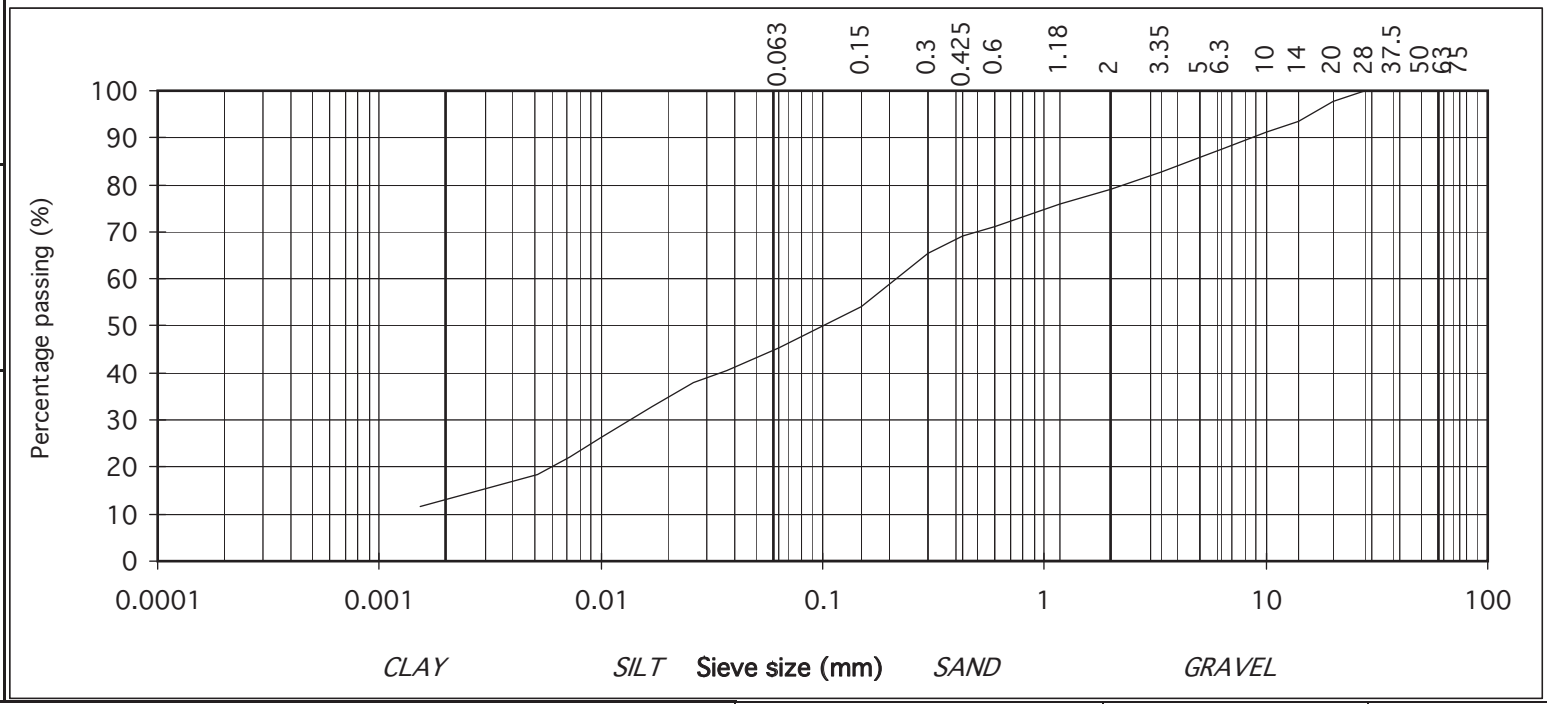
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 137T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	98	
14	94	
10	91	
6.3	88	
5	86	
3.35	83	
2	79	
1.18	76	SAND
0.6	71	
0.425	69	
0.3	65	
0.15	54	
0.063	45	SILT/CLAY
0.037	40	
0.026	38	
0.017	33	
0.010	26	
0.007	22	
0.005	18	
0.002	11	

Contract No. 22473 Report No. R111530
Contract: IDA Business Park , Donore Rd.,Drogheda , Co.Louth
BH/TP : BH08A
Sample No. AA135134 Lab. Sample No. A20/1665
Sample Type: B
Depth (m) 4.00 Customer: CSE
Date Received 22/05/2020 Date Testing started 22/05/2020
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

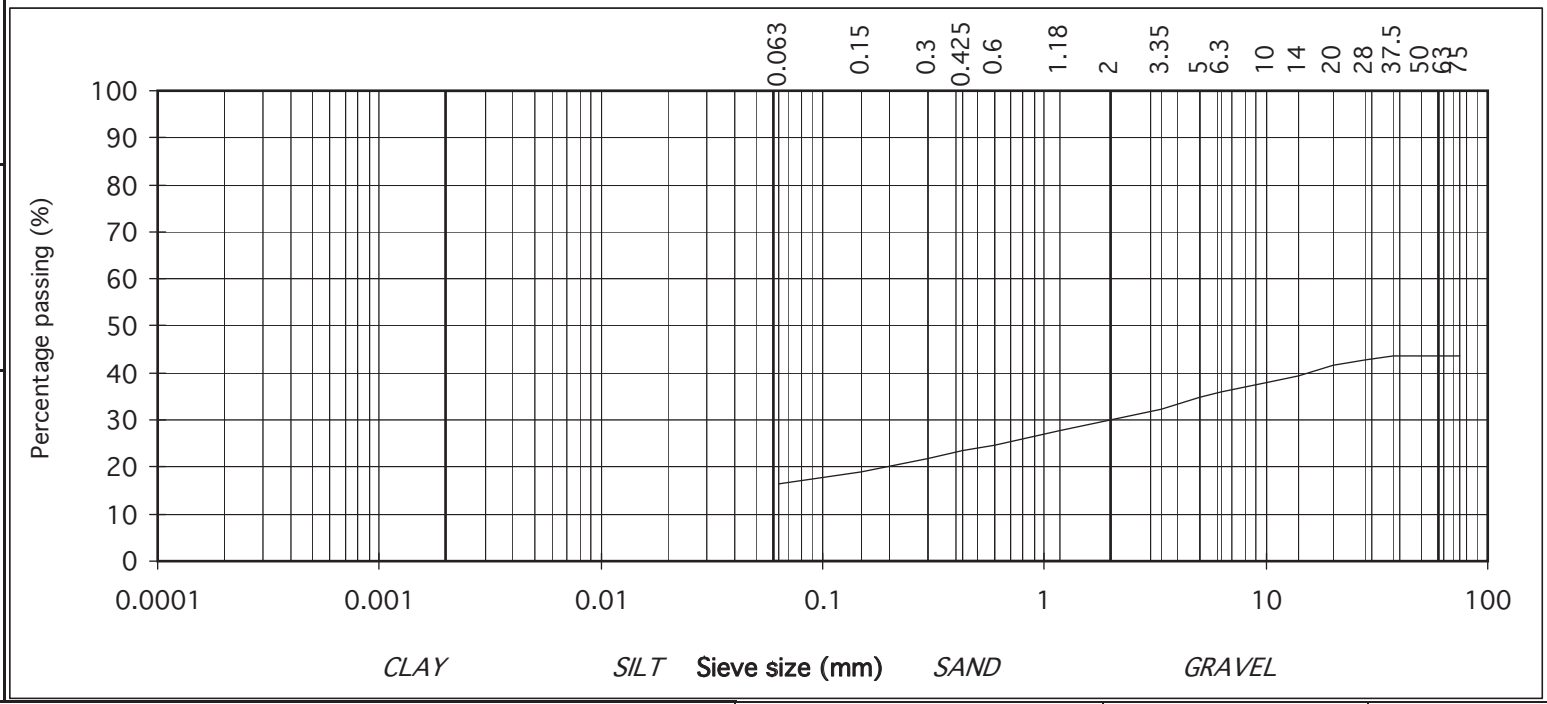
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 137T

particle size	% passing	
75	44	COBBLES
63	44	
50	44	GRAVEL
37.5	44	
28	43	
20	42	
14	39	
10	38	
6.3	36	
5	35	
3.35	32	
2	30	
1.18	28	SAND
0.6	25	
0.425	23	
0.3	22	
0.15	19	
0.063	17	SILT/CLAY

Contract No. 22473 Report No. R111531
Contract: IDA Business Park , Donore Rd.,Drogheda , Co.Louth
BH/TP : BH12
Sample No. AA135488 Lab. Sample No. A20/1668
Sample Type: B
Depth (m) 3.00 Customer: CSE
Date Received 22/05/2020 Date Testing started 22/05/2020
Description: COBBLES with brown clayey, sandy, gravel

Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received. Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

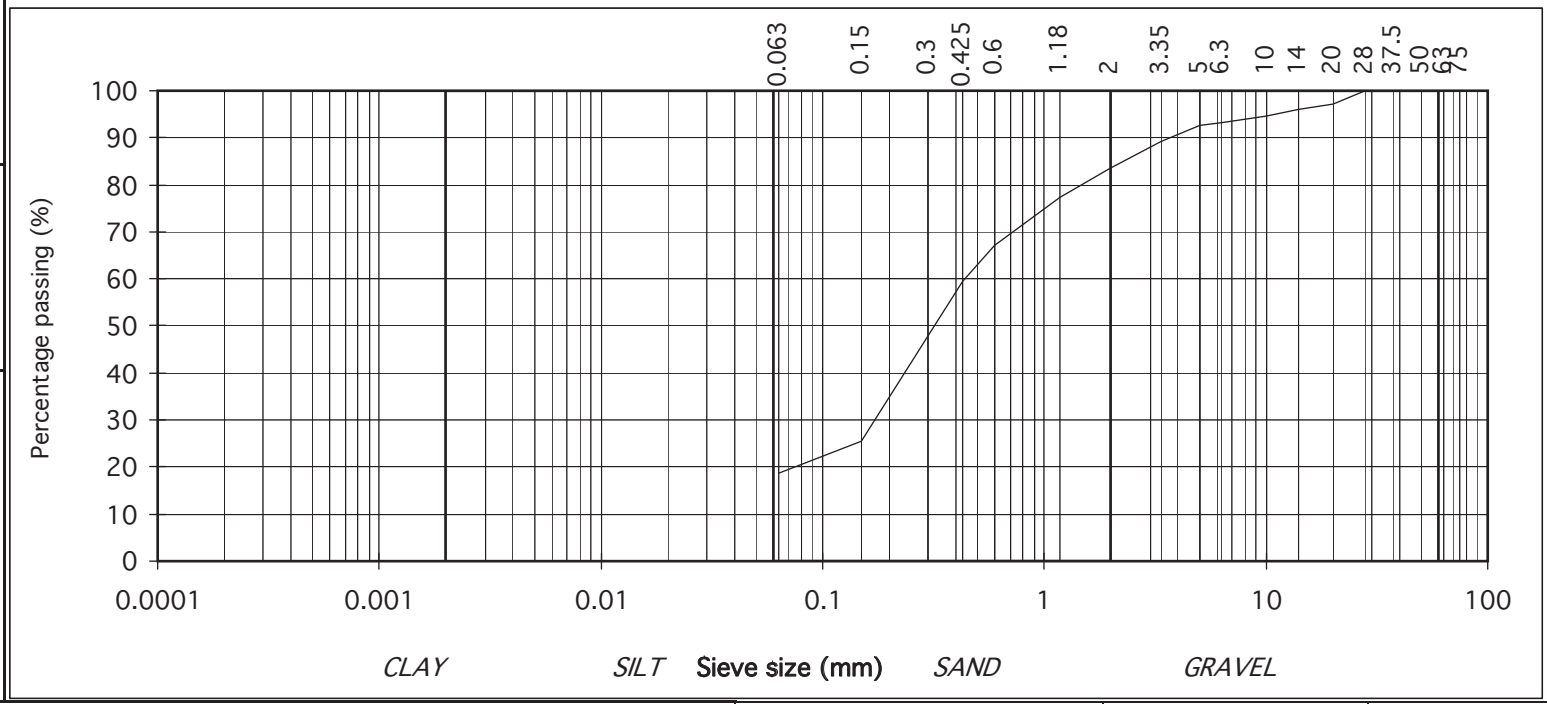
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 137T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	97	
14	96	
10	95	
6.3	93	
5	93	
3.35	89	
2	84	
1.18	77	SAND
0.6	67	
0.425	60	
0.3	48	
0.15	26	
0.063	19	SILT/CLAY

Contract No.	22473	Report No.	R111532
Contract:	IDA Business Park , Donore Rd.,Drogheda , Co.Louth		
BH/TP :	BH13		
Sample No.	AA135483	Lab. Sample No.	A20/1670
Sample Type:	B		
Depth (m)	4.00	Customer:	CSE
Date Received	22/05/2020	Date Testing started	22/05/2020
Description:	Brown silty, gravelly, SAND		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



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Approved by:	Date:	Page no:
H Byrne	05/06/20	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

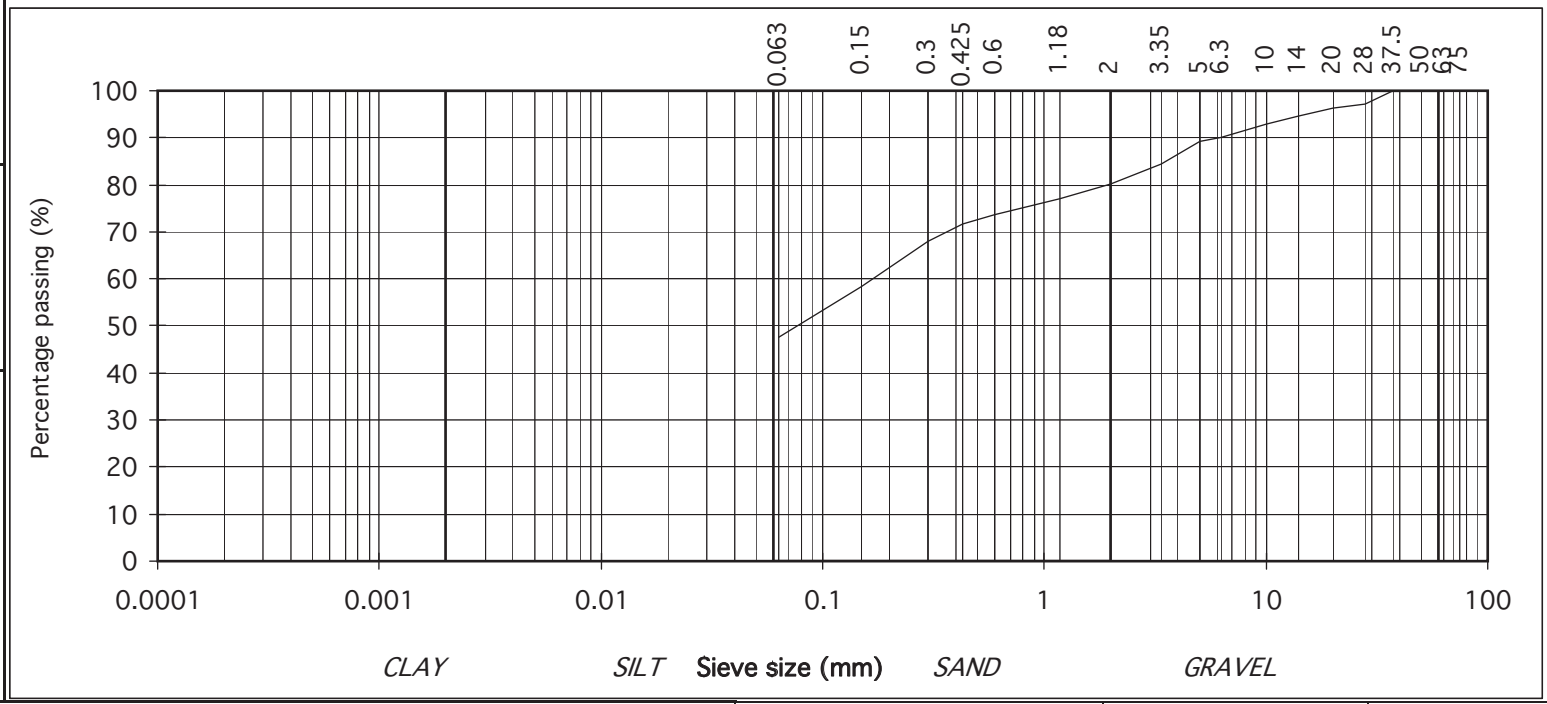
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 137T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	96	
14	95	
10	93	
6.3	90	
5	89	
3.35	84	
2	80	
1.18	77	SAND
0.6	74	
0.425	72	
0.3	68	
0.15	58	
0.063	48	SILT/CLAY

Contract No. 22473 Report No. R111568
Contract: IDA Business Park , Donore Rd.,Drogheda , Co.Louth
BH/TP : BH15
Sample No. AA135127 Lab. Sample No. A20/1672
Sample Type: B
Depth (m) 3.00 Customer: CSE
Date Received 22/05/2020 Date Testing started 22/05/2020
Description: Brown slightly sandy, slightly gravelly, CLAY

Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

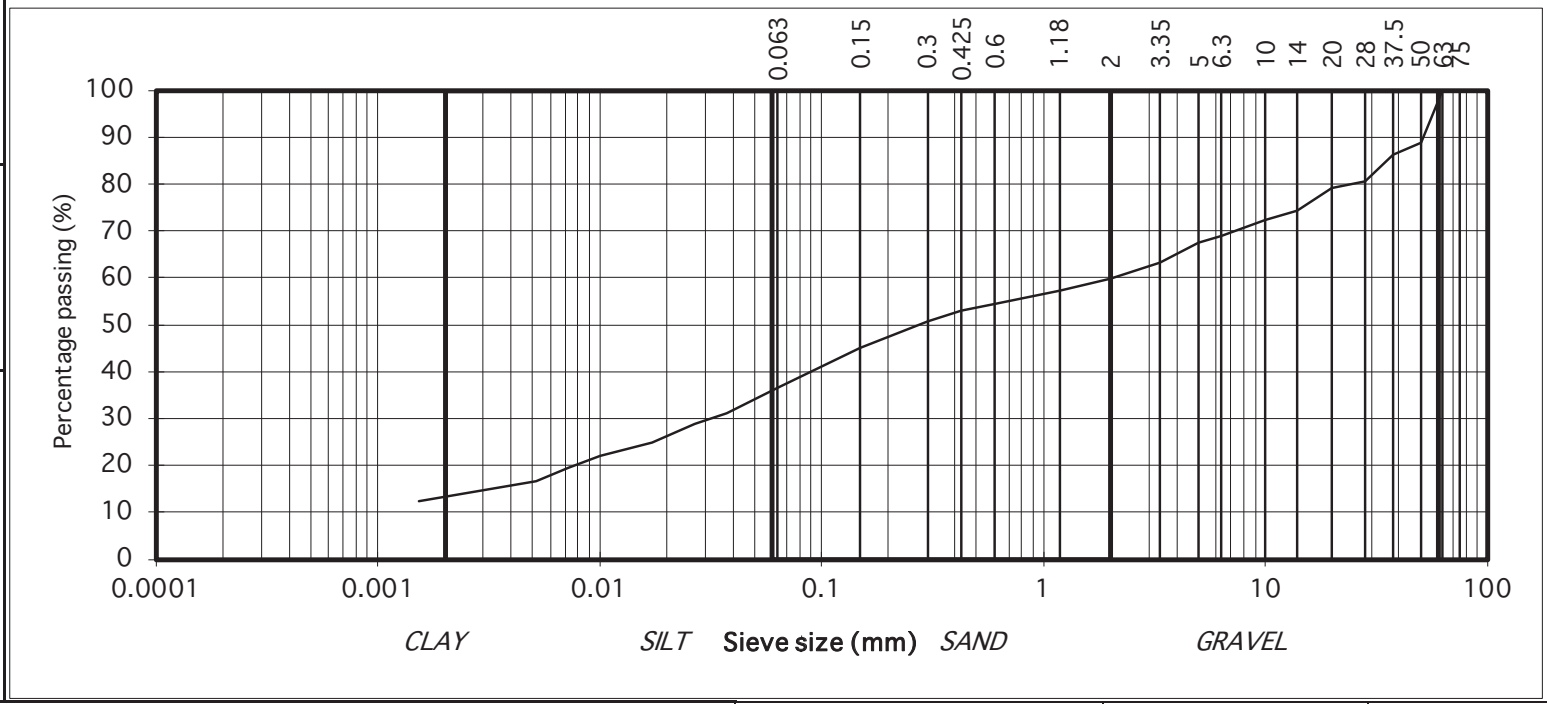
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	89	GRAVEL
37.5	86	
28	81	
20	79	
14	74	
10	72	
6.3	69	
5	68	
3.35	63	
2	60	
1.18	57	SAND
0.6	54	
0.425	53	
0.3	51	
0.15	45	
0.063	37	SILT/CLAY
0.037	31	
0.027	29	
0.017	25	
0.010	22	
0.007	20	
0.005	17	
0.002	12	

Contract No:	22473	Report No.	R111280
Contract :	IDA Business Park Donore Rd Drogheda		
BH/TP :	TP06		
Sample No.	AA131872	Lab. Sample No.	A20/1456
Sample Type:	B		
Depth (m)	2.00	Customer:	CSE
Date Received	07/05/2020	Date Testing started	08/05/2020
Description:	Brown slightly sandy, gravelly, CLAY		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received. Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
H Byrne	19/12/19	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

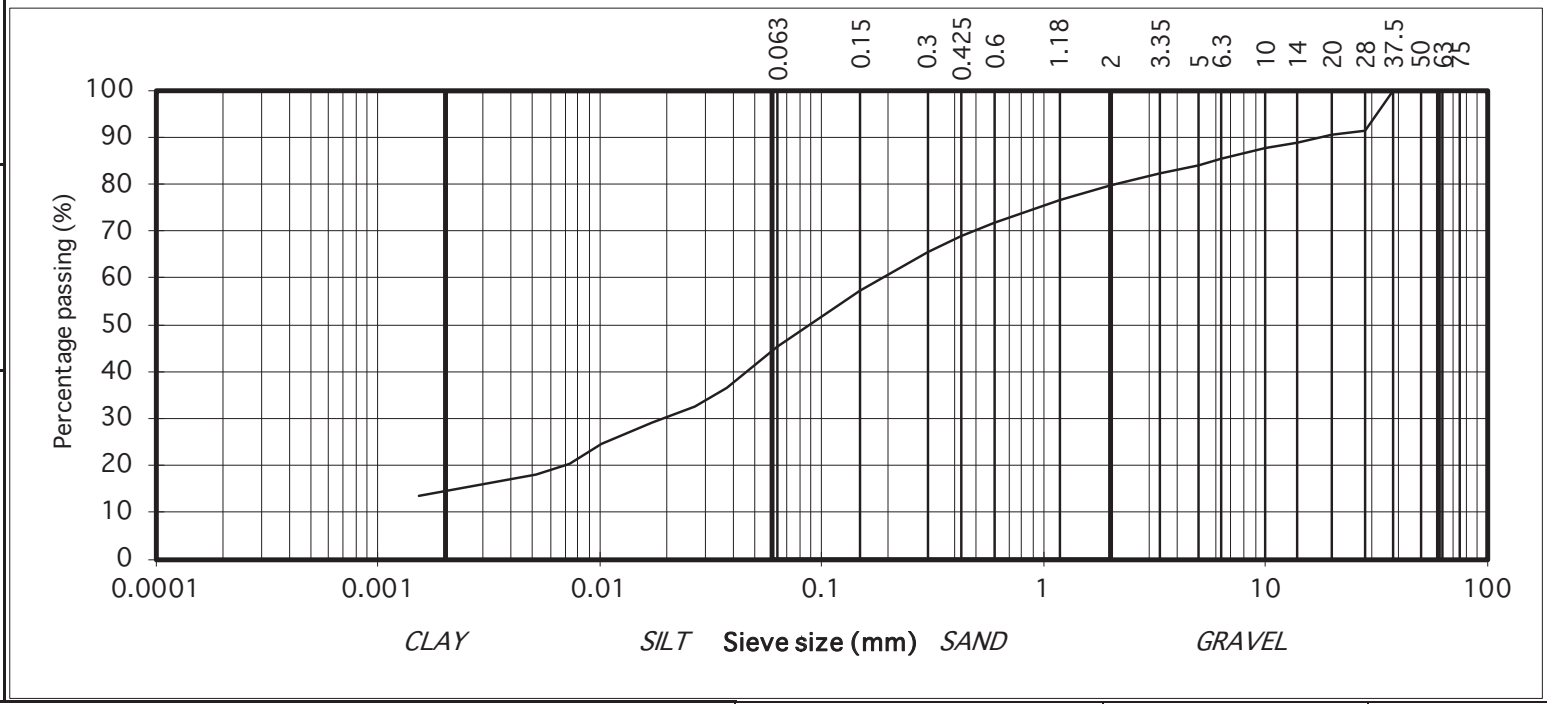
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	91	
20	91	
14	89	
10	88	
6.3	85	
5	84	
3.35	82	
2	80	
1.18	77	SAND
0.6	72	
0.425	69	
0.3	66	
0.15	57	
0.063	45	SILT/CLAY
0.038	36	
0.027	33	
0.017	29	
0.010	24	
0.007	20	
0.005	18	
0.002	14	

Contract No:	22473	Report No.	R111273
Contract :	IDA Business Park Donore Rd Drogheda		
BH/TP :	TP09		
Sample No.	AA131877	Lab. Sample No.	A20/1459
Sample Type:	B		
Depth (m)	2.00	Customer:	CSE
Date Received	07/05/2020	Date Testing started	08/05/2020
Description:	Brown slightly sandy, slightly gravelly, CLAY		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



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Approved by:	Date:	Page no:
H Byrne	19/12/19	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

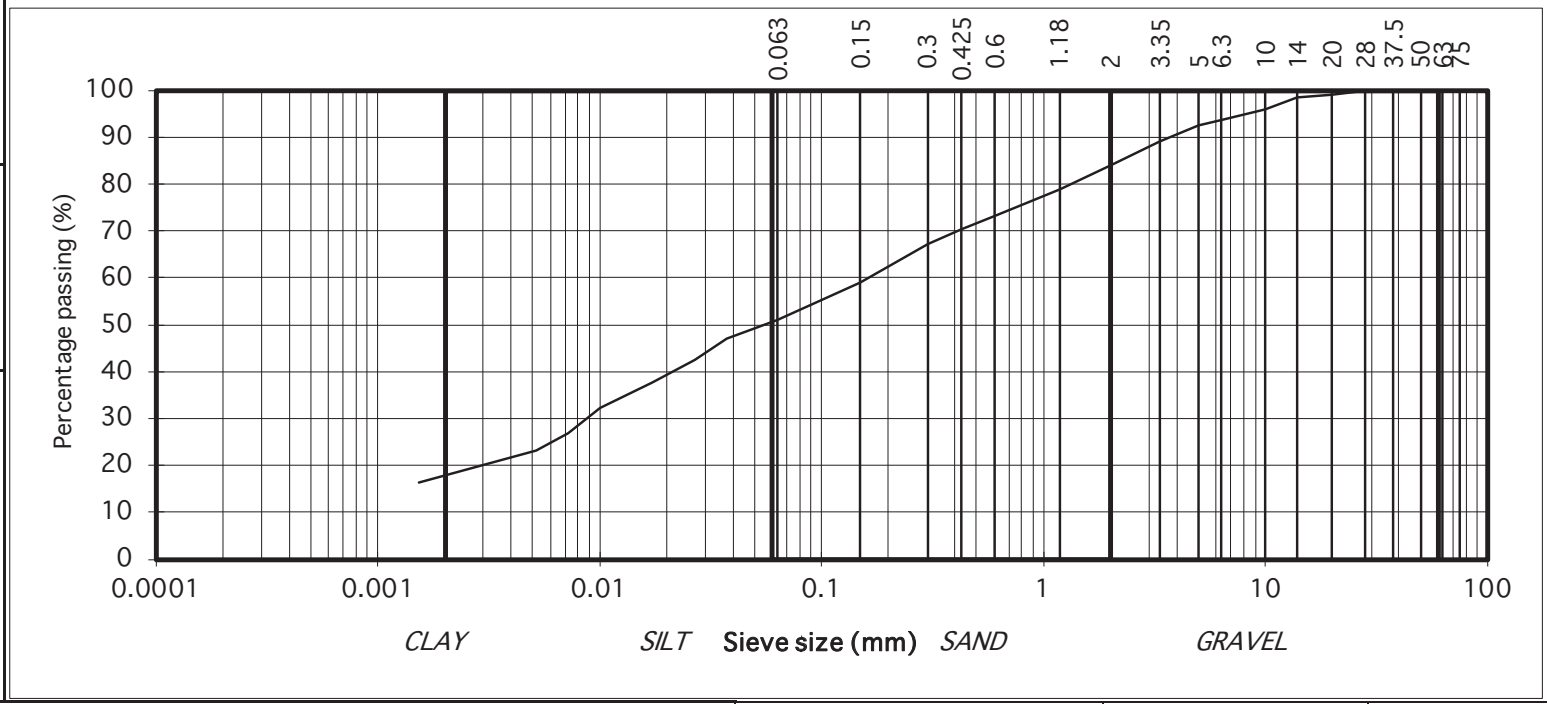
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	99	
14	99	
10	96	
6.3	94	
5	93	
3.35	89	
2	84	
1.18	79	SAND
0.6	73	
0.425	71	
0.3	67	
0.15	59	
0.063	51	SILT/CLAY
0.037	47	
0.027	43	
0.017	38	
0.010	32	
0.007	27	
0.005	23	
0.002	17	

Contract No:	22473	Report No.	R111275
Contract :	IDA Business Park Donore Rd Drogheda		
BH/TP :	TP11		
Sample No.	AA131889	Lab. Sample No.	A20/1461
Sample Type:	B		
Depth (m)	2.50	Customer:	CSE
Date Received	07/05/2020	Date Testing started	08/05/2020
Description:	Brown slightly sandy, slightly gravelly, CLAY		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



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Approved by:	Date:	Page no:
H Byrne	23/05/20	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

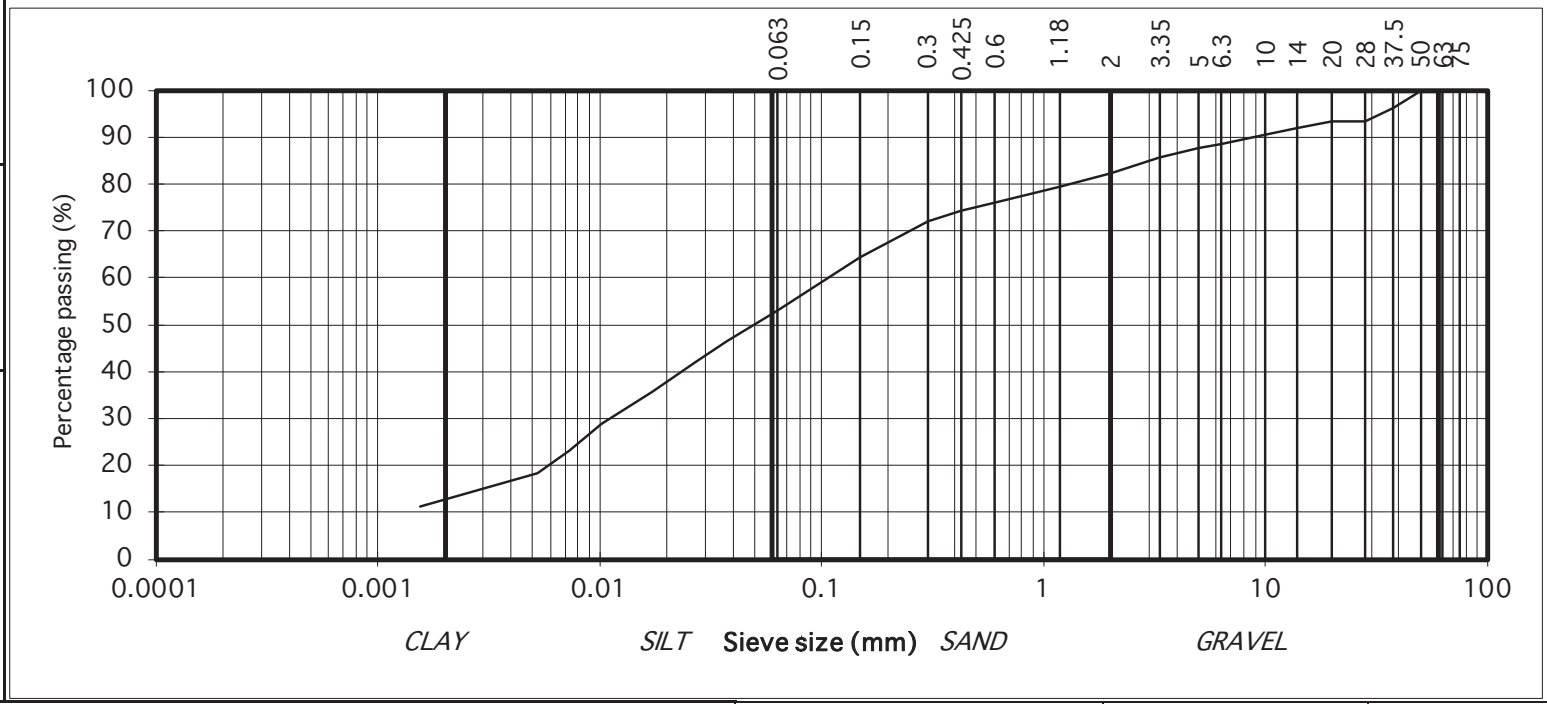
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	96	
28	94	
20	94	
14	92	
10	91	
6.3	89	
5	88	
3.35	86	
2	82	
1.18	79	SAND
0.6	76	
0.425	74	
0.3	72	
0.15	64	
0.063	53	SILT/CLAY
0.037	46	
0.027	42	
0.017	36	
0.010	29	
0.007	23	
0.005	18	
0.002	11	

Contract No:	22473	Report No.	R111279
Contract :	IDA Business Park Donore Rd Drogheda		
BH/TP :	TP14		
Sample No.	AA131880	Lab. Sample No.	A20/1464
Sample Type:	B		
Depth (m)	2.00	Customer:	CSE
Date Received	07/05/2020	Date Testing started	08/05/2020
Description:	Brown slightly sandy, slightly gravelly, CLAY		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	19/12/19	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

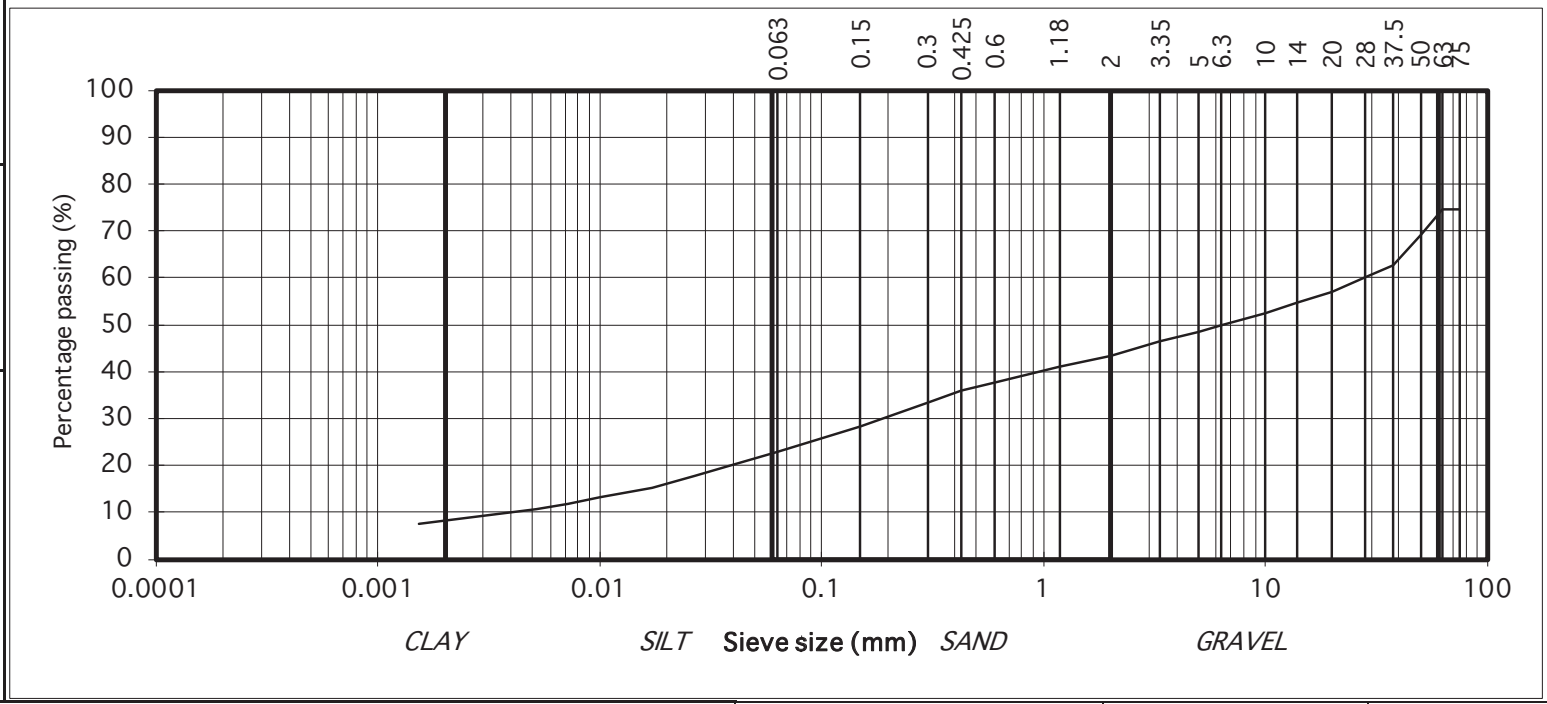
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	75	COBBLES
63	75	
50	69	GRAVEL
37.5	63	
28	60	
20	57	
14	55	
10	53	
6.3	50	
5	48	
3.35	46	
2	43	
1.18	41	SAND
0.6	38	
0.425	36	
0.3	33	
0.15	28	
0.063	23	SILT/CLAY
0.037	20	
0.027	18	
0.017	15	
0.010	13	
0.007	12	
0.005	11	
0.002	8	

Contract No: 22473 Report No. R111276
Contract : IDA Business Park Donore Rd Drogheda
BH/TP : BH03
Sample No. AA135460 Lab. Sample No. A20/1470
Sample Type: B
Depth (m) 4.00 Customer: CSE
Date Received 07/05/2020 Date Testing started 08/05/2020
Description: Grey slightly sandy, slightly gravelly, CLAY with many cobbles

Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received. Sample size did not meet the requirements of BS1377



IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
H Byrne	19/12/19	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

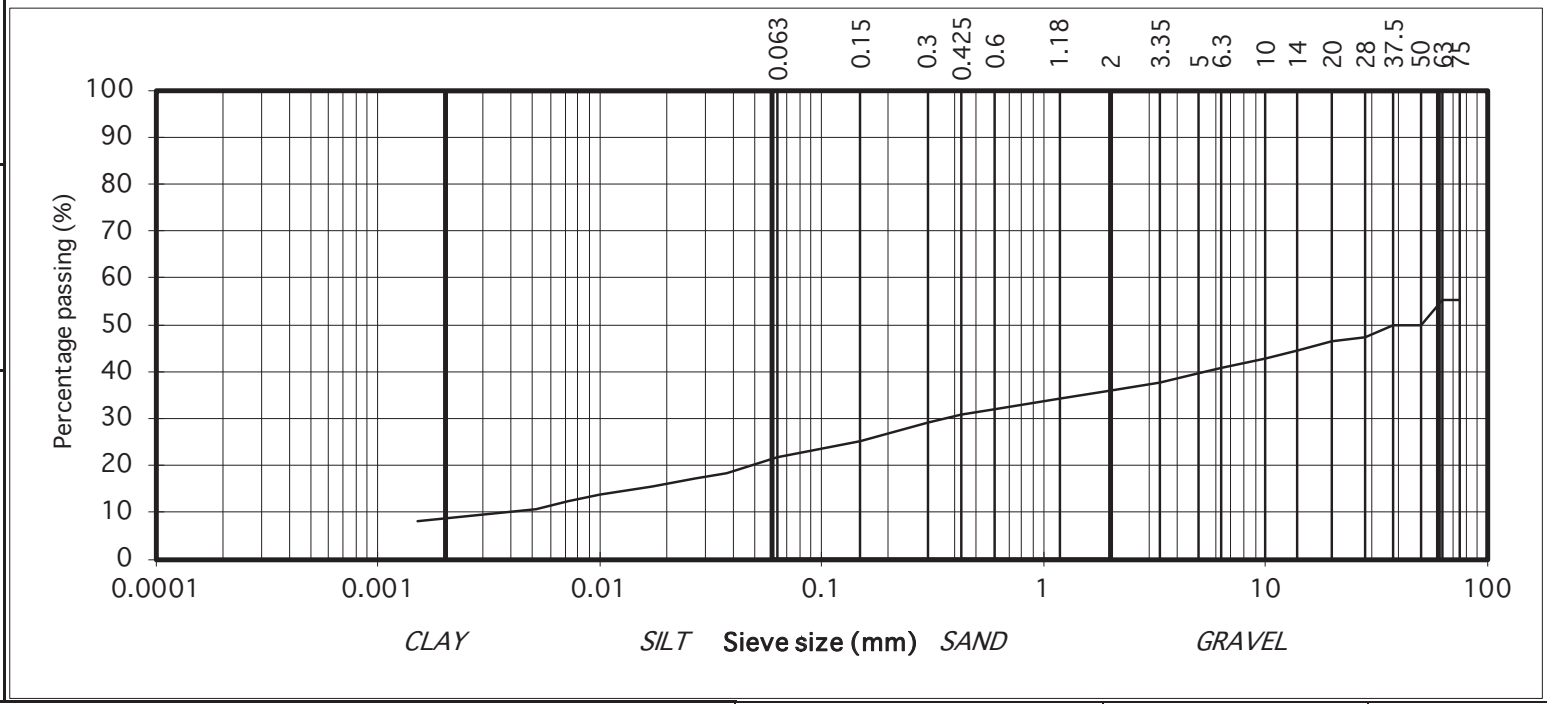
TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	55	COBBLES
63	55	
50	50	GRAVEL
37.5	50	
28	47	
20	47	
14	44	
10	43	
6.3	41	
5	40	
3.35	38	
2	36	
1.18	34	SAND
0.6	32	
0.425	31	
0.3	29	
0.15	25	
0.063	22	SILT/CLAY
0.038	18	
0.027	17	
0.017	16	
0.010	14	
0.007	12	
0.005	11	
0.002	8	

Contract No: 22473 Report No. R111281
Contract : IDA Business Park Donore Rd Drogheda
BH/TP : BH04
Sample No. AA13049 Lab. Sample No. A20/1471
Sample Type: B
Depth (m) 4.00 Customer: CSE
Date Received 07/05/2020 Date Testing started 08/05/2020
Description: Brown slightly sandy, slightly gravelly, CLAY with many cobbles

Remarks Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received. Sample size did not meet the requirements of BS1377



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Approved by:	Date:	Page no:
H Byrne	22/05/20	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

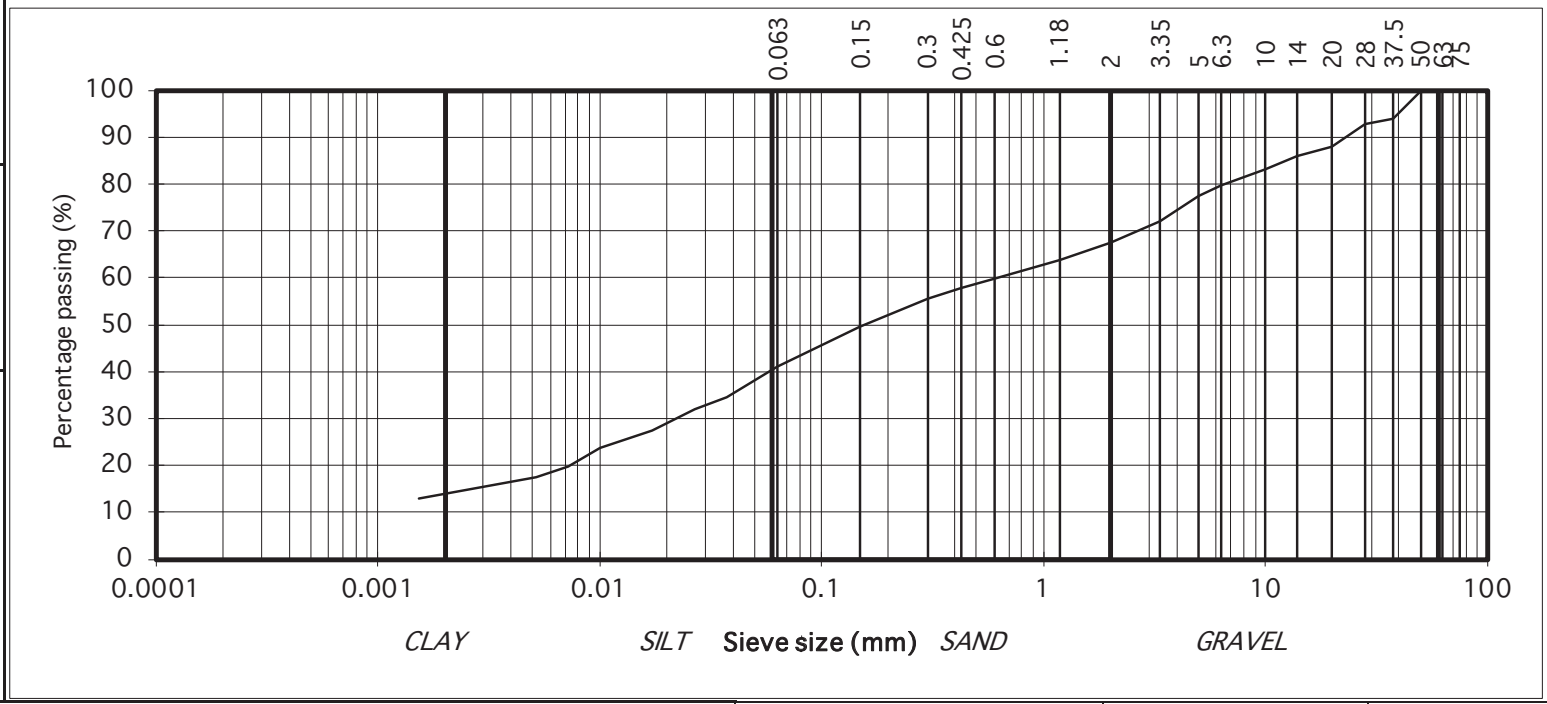
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	94	
28	93	
20	88	
14	86	
10	83	
6.3	80	
5	78	
3.35	72	
2	68	
1.18	64	SAND
0.6	60	
0.425	58	
0.3	56	
0.15	50	
0.063	41	SILT/CLAY
0.037	35	
0.027	32	
0.017	27	
0.010	24	
0.007	20	
0.005	17	
0.002	13	

Contract No:	22473	Report No.	R111274
Contract :	IDA Business Park Donore Rd Drogheda		
BH/TP :	BH06		
Sample No.	AA135454	Lab. Sample No.	A20/1472
Sample Type:	B		
Depth (m)	4.00	Customer:	CSE
Date Received	07/05/2020	Date Testing started	08/05/2020
Description:	Grey slightly sandy, slightly gravelly, CLAY		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5
(note: Sedimentation stage not accredited)

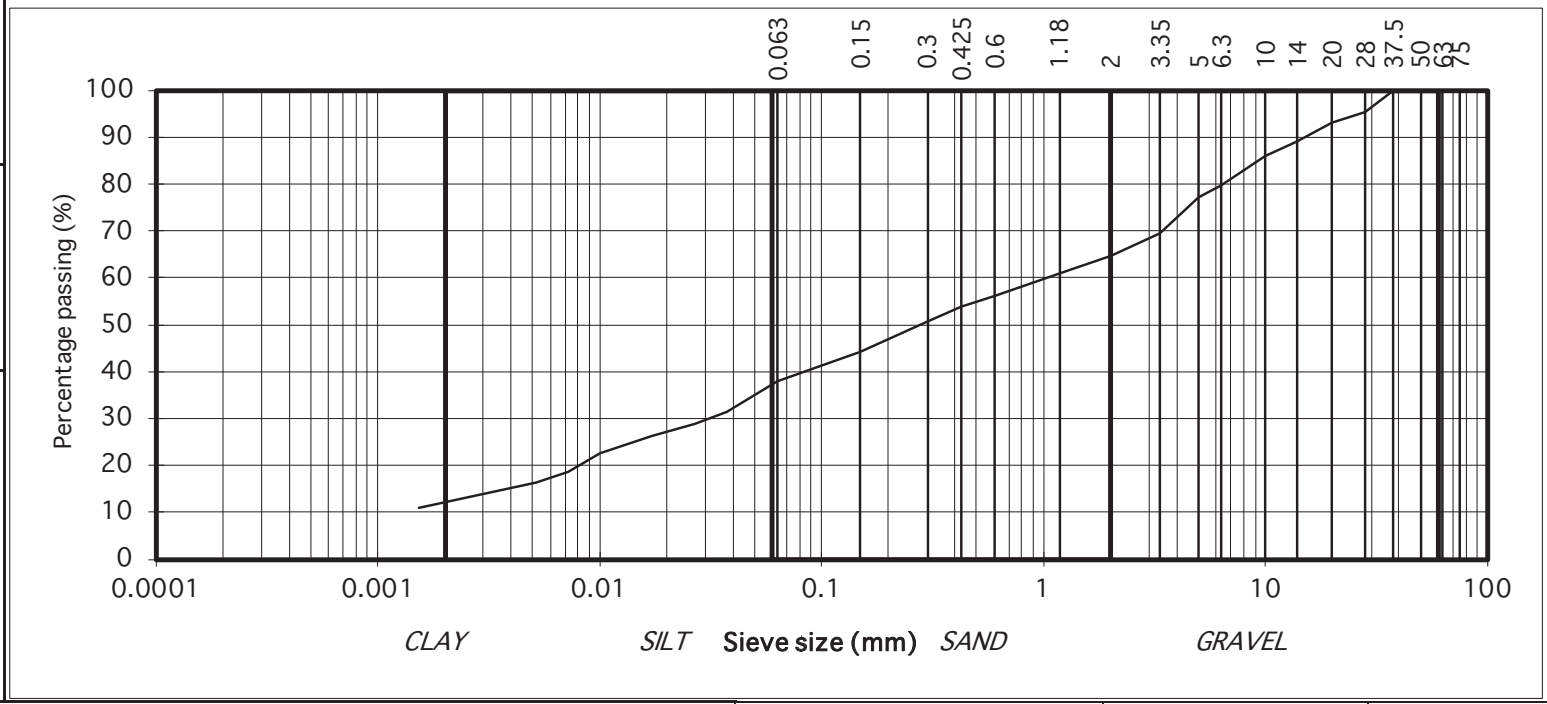
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	96	
20	93	
14	89	
10	86	
6.3	80	
5	77	
3.35	70	
2	65	
1.18	61	SAND
0.6	56	
0.425	54	
0.3	51	
0.15	44	
0.063	38	SILT/CLAY
0.037	31	
0.027	29	
0.017	26	
0.010	23	
0.007	19	
0.005	16	
0.002	11	

Contract No:	22473	Report No.	R111277
Contract :	IDA Business Park Donore Rd Drogheda		
BH/TP :	BH09		
Sample No.	AA135473	Lab. Sample No.	A20/1474
Sample Type:	B		
Depth (m)	5.00	Customer:	CSE
Date Received	07/05/2020	Date Testing started	08/05/2020
Description:	Grey slightly sandy, gravelly, CLAY		

Remarks

Note: Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 . Results apply to sample as received.



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Approved by:	Date:	Page no:
H Byrne	22/05/20	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas
Co. Kildare
045 899324

Test Report

Determination of Moisture Condition Value at Natural Moisture Content

Tested in accordance with BS1377:Part 4:1990, clause 5.4

Report No.	**R111319**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP01
Sample No.	AA131859
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1452
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	14/05/20
Sample Cert:	N/A
Moisture Content (%):	24
% Particles > 20mm (By dry mass):	5
MCV:	11.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

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Materials Laboratory
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Tested in accordance with BS1377:Part 4:1990, clause 5.4

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Report No.	**R111322**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP03
Sample No.	AA131869
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1453
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	14/05/20
Sample Cert:	N/A
Moisture Content (%):	15
% Particles > 20mm (By dry mass):	38
MCV:	7.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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H Byrne (Laboratory Manager)

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Report No.	**R111321**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP05
Sample No.	AA131873
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1455
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	12
% Particles > 20mm (By dry mass):	52
MCV:	7.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
Sampling and opinions and interpretations are outside the scope of accreditation.

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Report No.	**R111317**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP07
Sample No.	AA131861
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1457
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	14
% Particles > 20mm (By dry mass):	20
MCV:	11.8
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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Report No.	**R111320**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP09
Sample No.	AA131876
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1458
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	19
% Particles > 20mm (By dry mass):	17
MCV:	8.1
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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Report No.	**R111315**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP11
Sample No.	AA131888
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1460
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	20
% Particles > 20mm (By dry mass):	12
MCV:	8.4
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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Report No.	**R111318**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP13
Sample No.	AA131866
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1462
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	21
% Particles > 20mm (By dry mass):	8
MCV:	3
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
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Report No.	**R111316**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP15
Sample No.	AA131851
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1465
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	24
% Particles > 20mm (By dry mass):	7
MCV:	7.5
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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Report No.	**R111313**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP18
Sample No.	AA131897
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1467
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	21
% Particles > 20mm (By dry mass):	4
MCV:	8.2
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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Report No.	**R111314**
Contract No.	22473
Contract Name:	IDA Business Park Donore Rd Drogheda
Customer:	CSE
BH/TP	TP19
Sample No.	AA131899
Depth (m)	1.00
Sample Type:	B
Lab Sample No.	A20/1468
Source (if applicable)	unknown
Material Type (if applicable):	B
Sample Received:	07/05/20
Date Tested:	19/05/20
Sample Cert:	N/A
Moisture Content (%):	17
% Particles > 20mm (By dry mass):	7
MCV:	6.6
Interpretation of Plot:	Steepest Straight Line
Description of Soil:	Brown sandy gravelly CLAY

The result applies to the sample as received.
Any remaining material will be retained for one month.
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Unit J5,M7 Business Park
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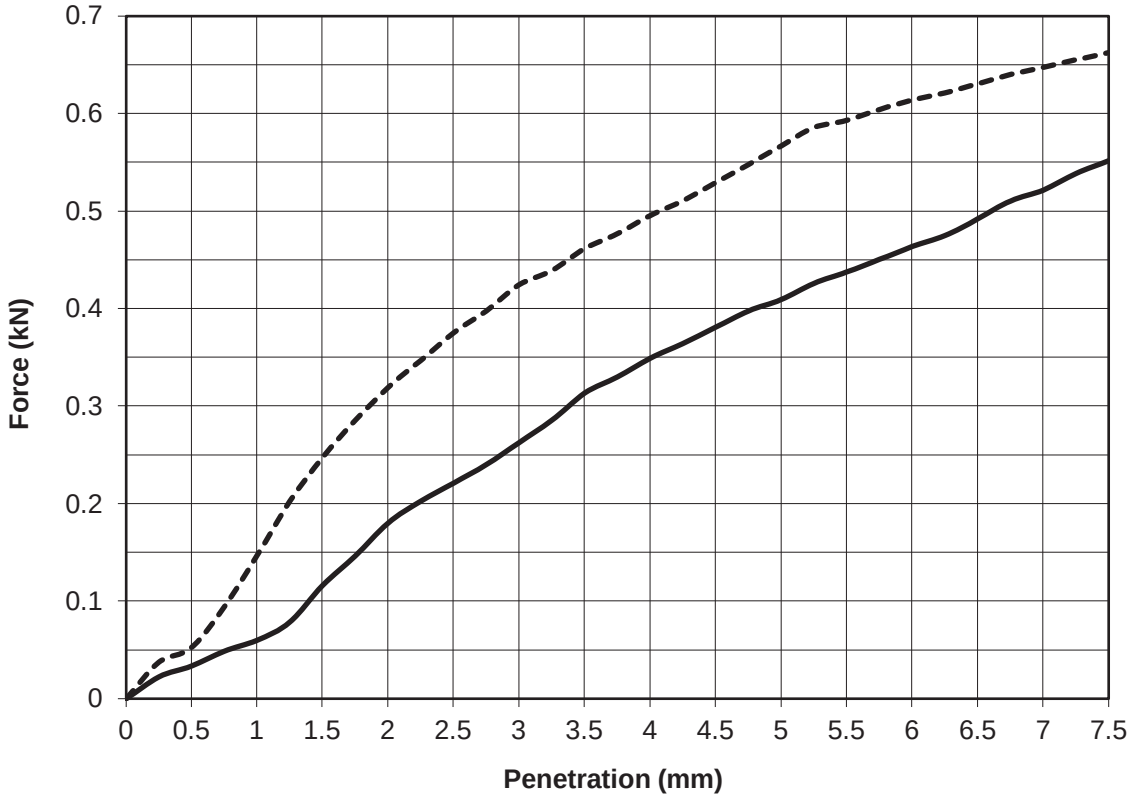
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111291	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP01	Sample No.	AA136859 Type: B
Depth (m)	1.00	Lab sample No.	A20/1452



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	22	Bulk Density (Mg/m^3):	1.88
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.53
% Material >20mm:	6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.1**	**2.8**
Moisture Content %	22	23

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Unit J5,M7 Business Park
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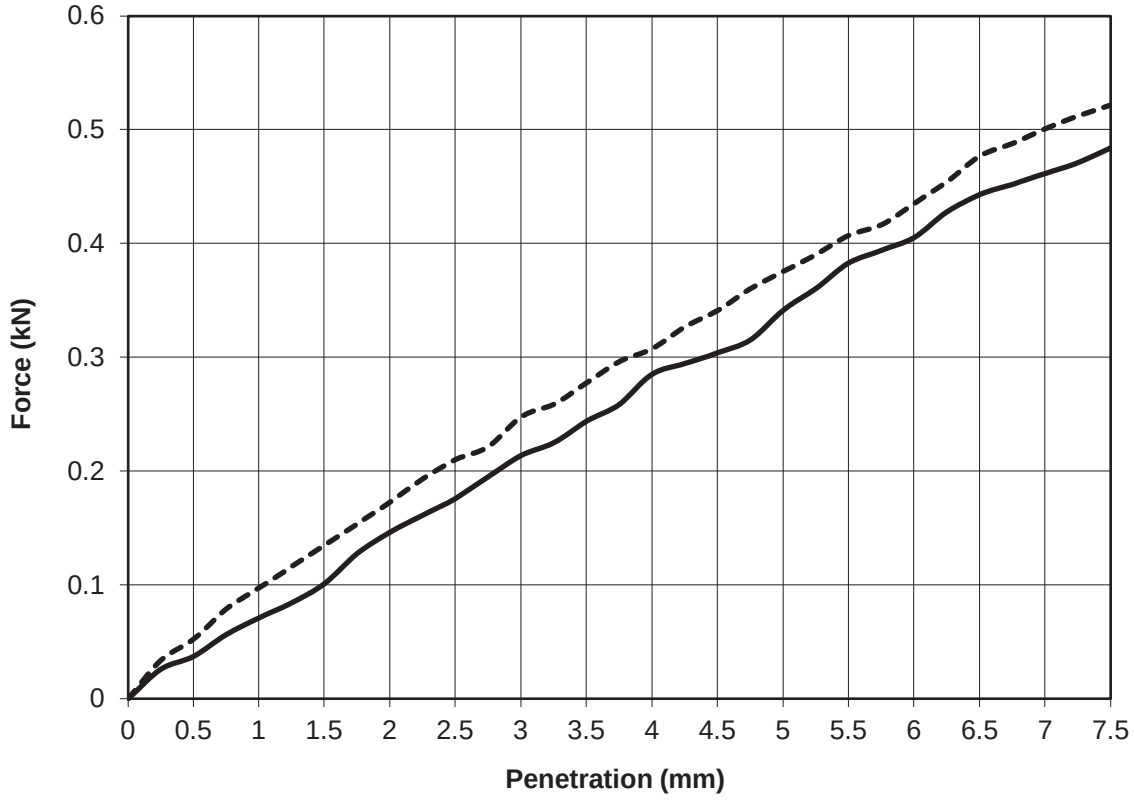
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111286	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP03	Sample No.	AA131869 Type: B
Depth (m)	1.00	Lab sample No.	A20/1453



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	15	Bulk Density (Mg/m^3):	2.17
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	33		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.7**	**1.9**
Moisture Content %	15	15

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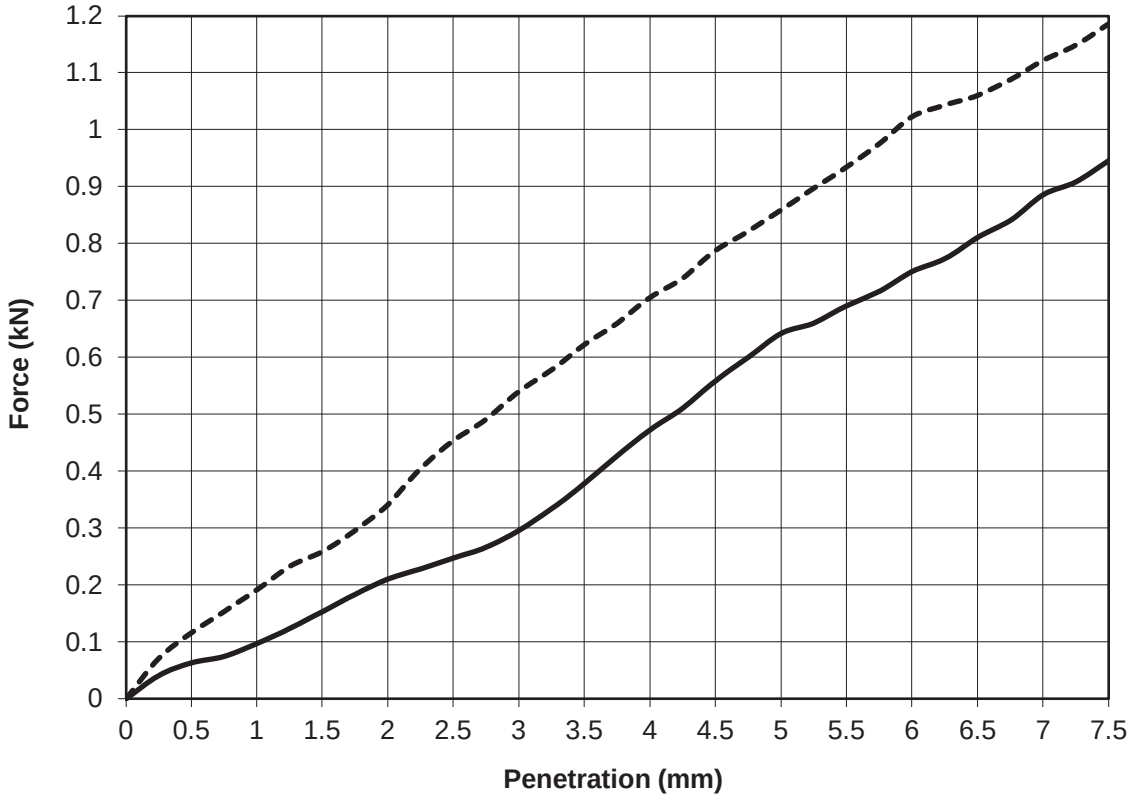
TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111285	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP05	Sample No.	AA131873 Type: B
Depth (m)	1.00	Lab sample No.	A20/1455



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	12	Bulk Density (Mg/m^3):	2.25
Surcharge (kg):	4	Dry Density (Mg/m^3):	2.00
% Material >20mm:	45		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**3.2**	**4.3**
Moisture Content %	13	12

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J Barrett (Quality Manager)
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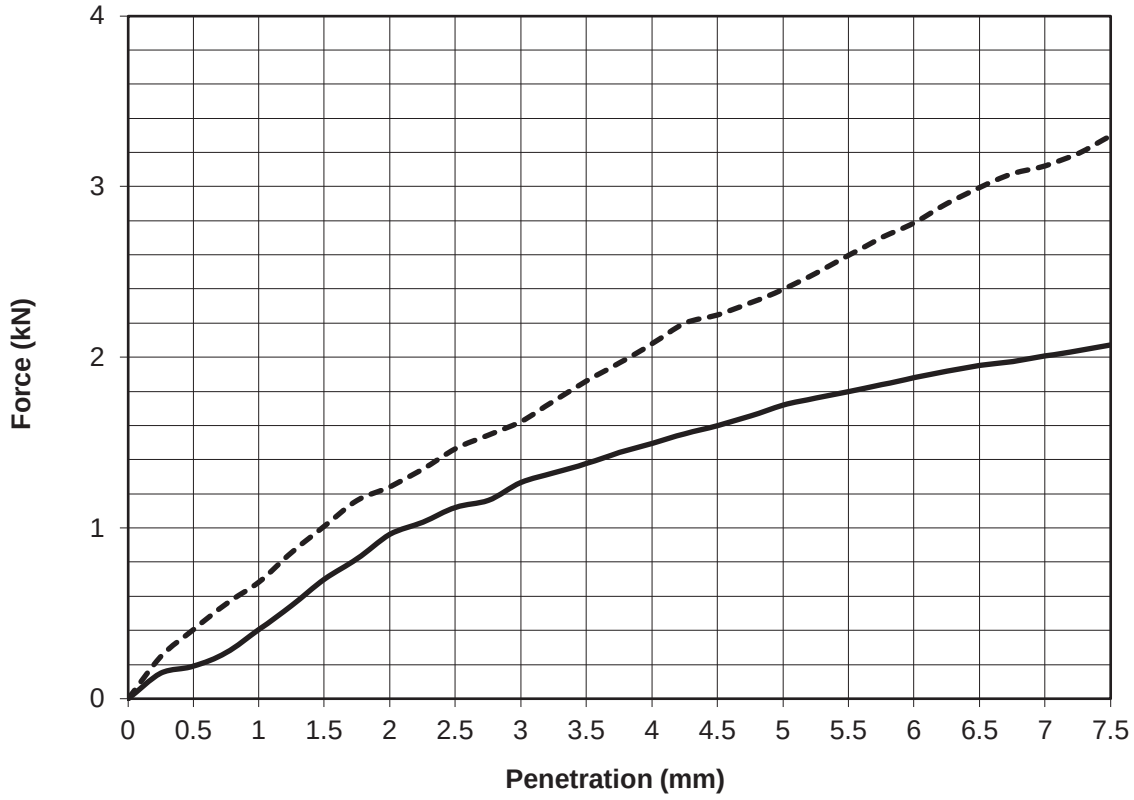
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111312	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP07	Sample No.	AA131861 Type: B
Depth (m)	1.00	Lab sample No.	A20/1457



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	14	Bulk Density (Mg/m^3):	2.16
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.89
% Material >20mm:	18		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**8.6**	**12.0**
Moisture Content %	14	14

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Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

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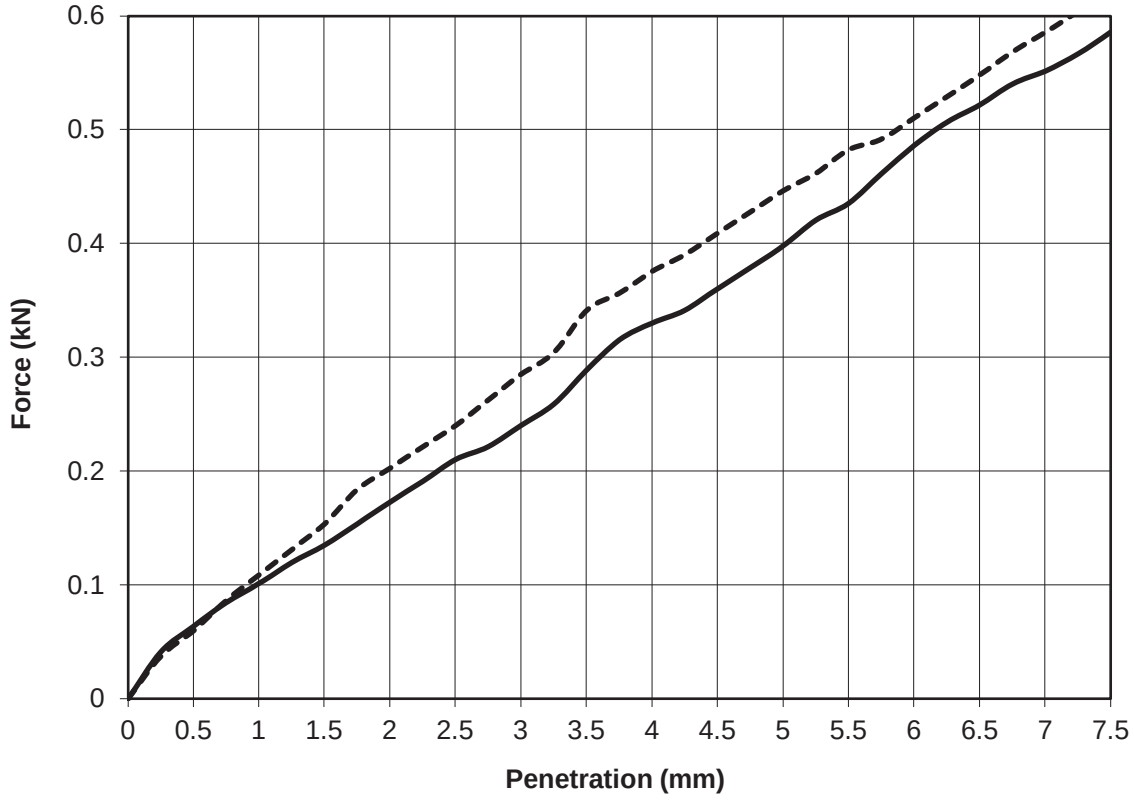
Report No.	R111287	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP09	Sample No.	AA131876 Type: B
Depth (m)	1.00	Lab sample No.	A20/1458



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	19	Bulk Density (Mg/m^3):	2.05
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.72
% Material >20mm:	14		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.0**	**2.2**
Moisture Content %	20	19

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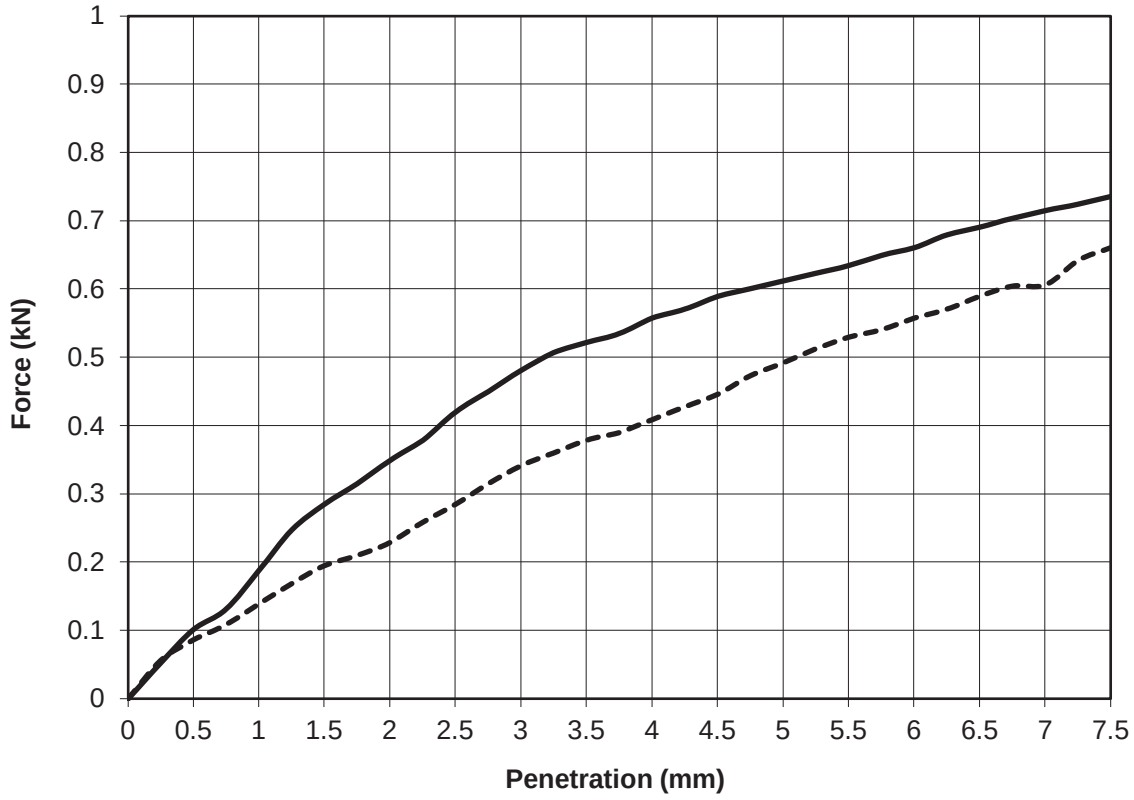
Report No.	R111283	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	14/05/20
BH/TP No.	TP11	Sample No.	AA131888 Type: B
Depth (m)	1.00	Lab sample No.	A20/1460



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	20	Bulk Density (Mg/m^3):	2.07
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.73
% Material >20mm:	9.8		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**3.2**	**2.5**
Moisture Content %	20	20

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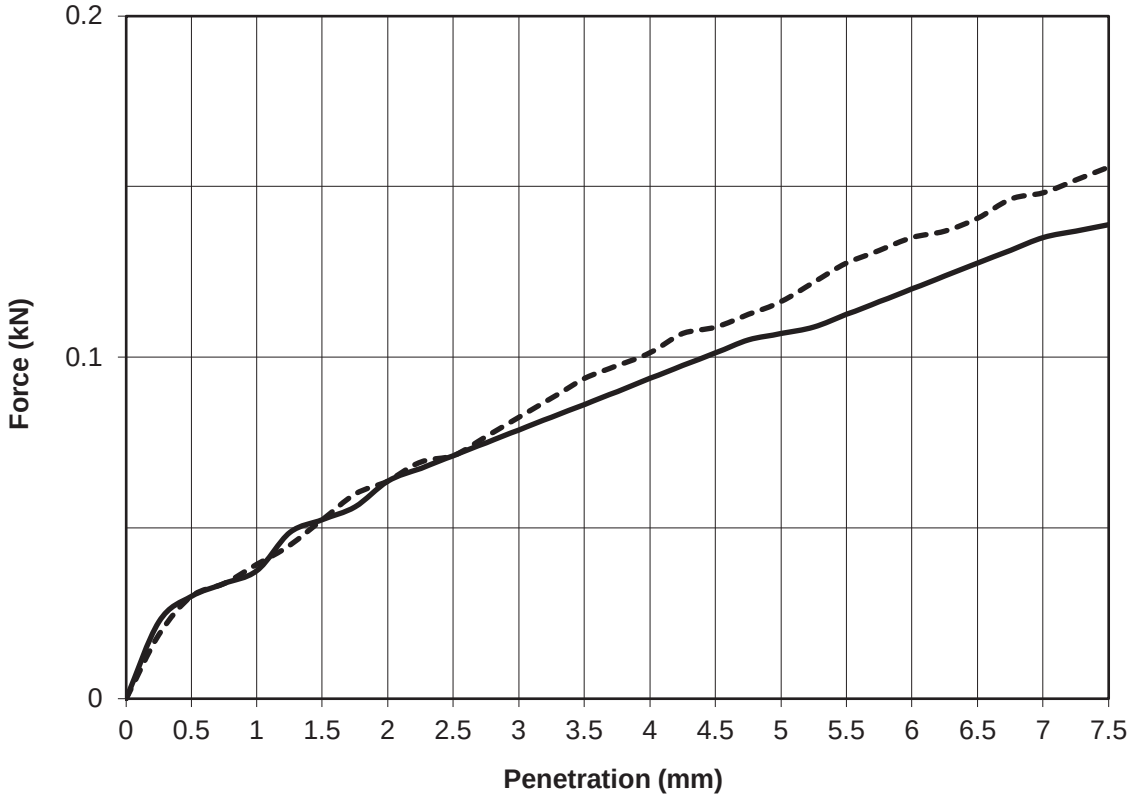
ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111313	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP13	Sample No.	AA131866 Type: B
Depth (m)	1.00	Lab sample No.	A20/1462



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	21	Bulk Density (Mg/m^3):	2.04
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.69
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**0.5**	**0.6**
Moisture Content %	20	21

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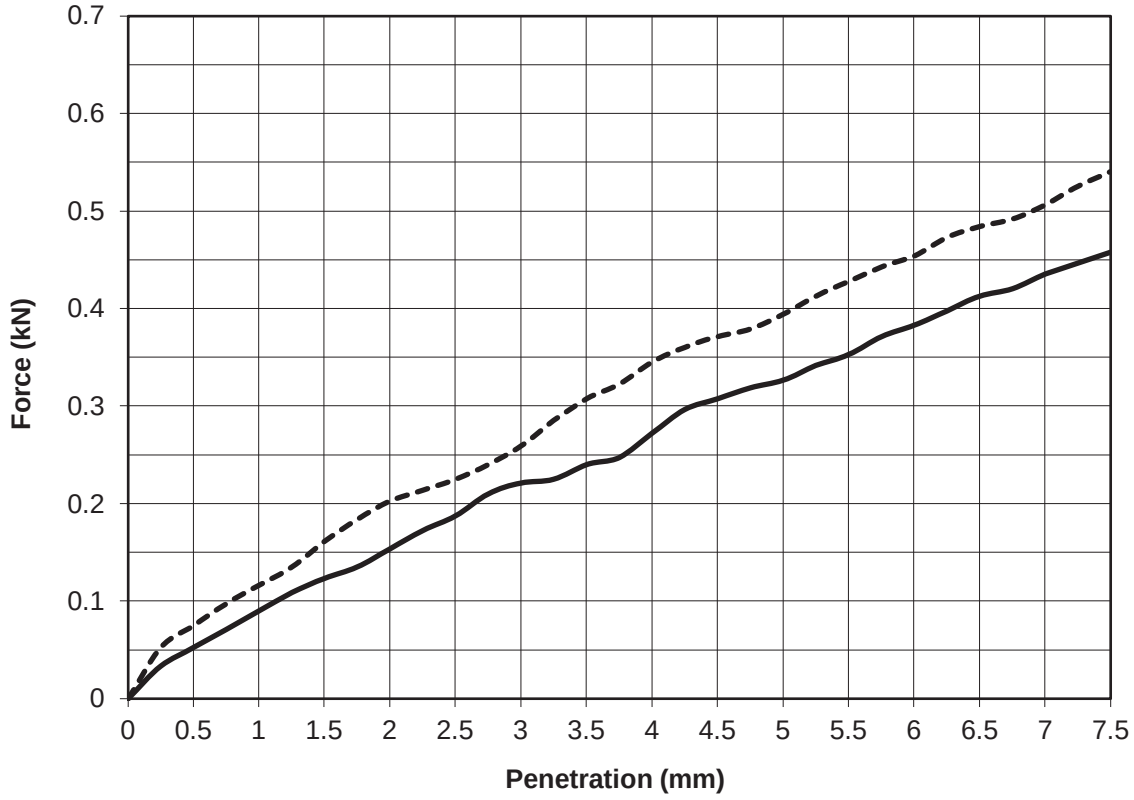
Report No.	R111290	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP15	Sample No.	AA136851 Type: B
Depth (m)	1.00	Lab sample No.	A20/1465



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	22	Bulk Density (Mg/m^3):	2.02
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.65
% Material >20mm:	9		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**1.6**	**2.0**
Moisture Content %	22	23

Persons authorized to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

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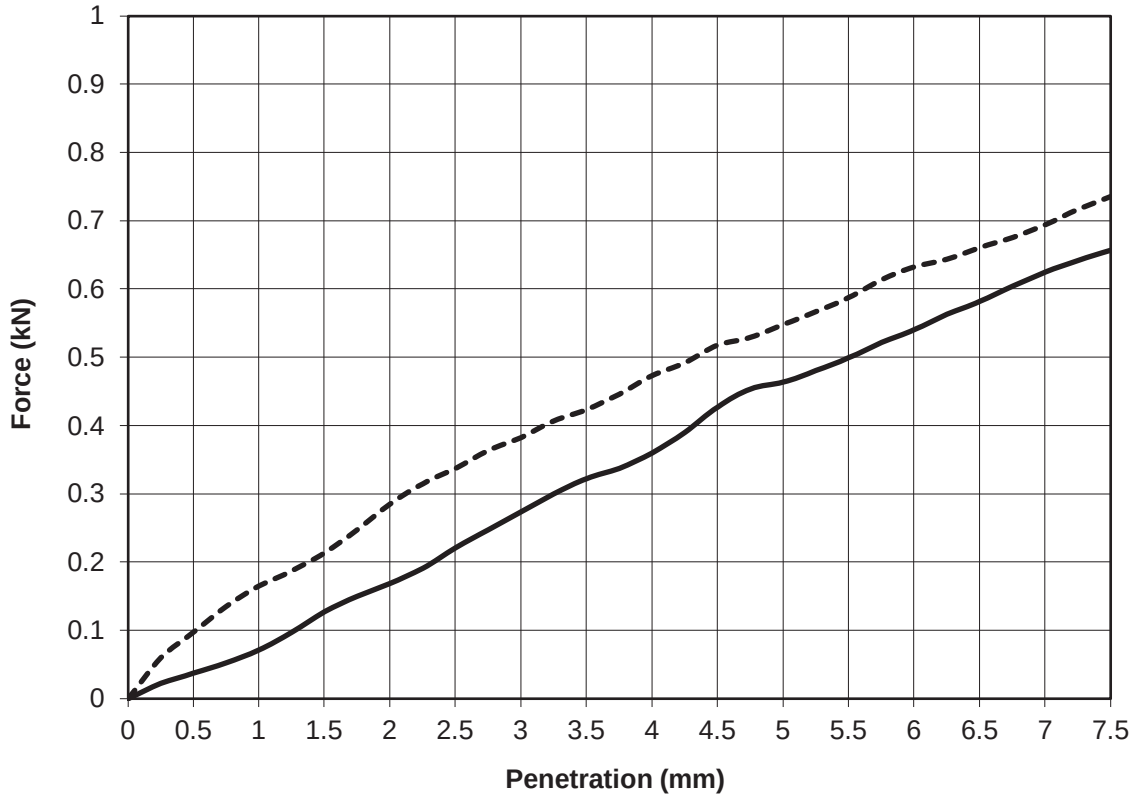
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111282	Contract	IDA Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	14/05/20
BH/TP No.	TP18	Sample No.	AA131897 Type: B
Depth (m)	1.00	Lab sample No.	A20/1467



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	21	Bulk Density (Mg/m^3):	2.03
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.68
% Material >20mm:	3.5		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.3**	**2.8**
Moisture Content %	21	21

Persons authorized to approve reports

J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

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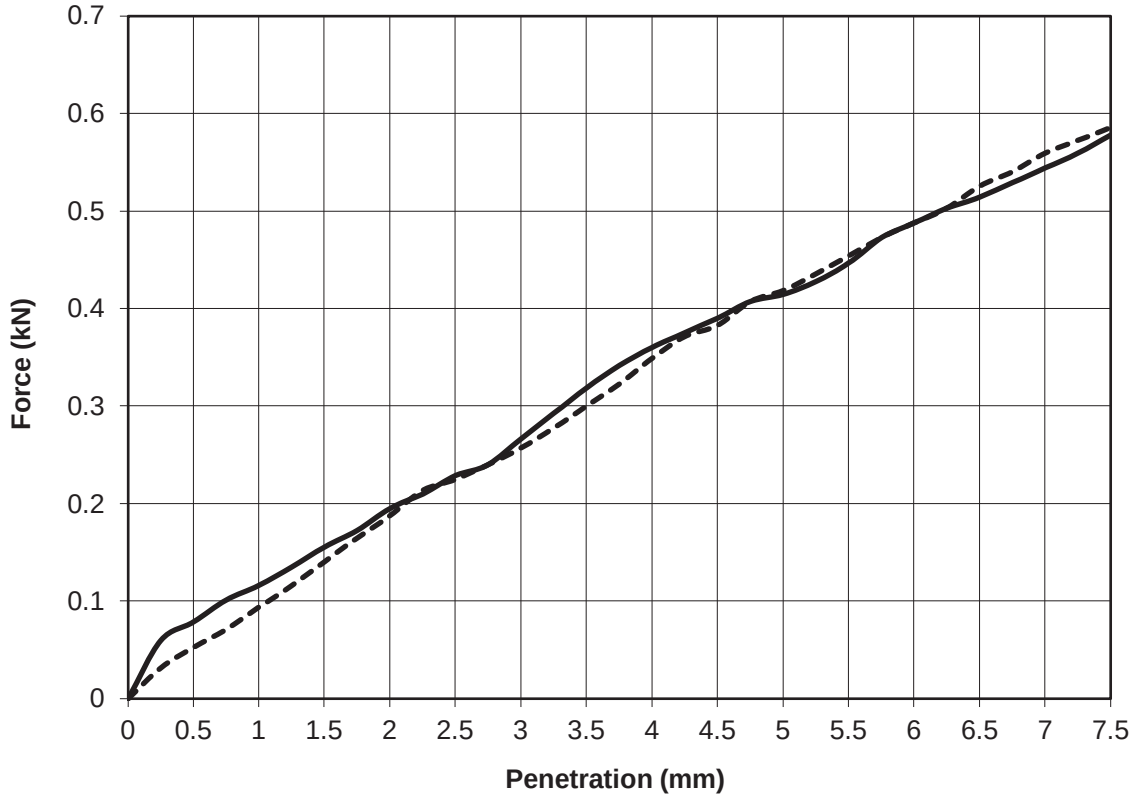
IGSL Ltd
Materials Laboratory
Unit J5,M7 Business Park
Naas Co.Kildare
045 899324

TEST REPORT
Determination of California Bearing Ratio (CBR)

Tested in accordance with BS1377:Part 4:1990, clause 7

ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No.	R111284	Contract	IDA Business Park Donore Rd Drogheda
Contract No.	22473	Customer	CSE
Date received	07/05/20	Date Tested	13/05/20
BH/TP No.	TP19	Sample No.	AA131899 Type: B
Depth (m)	1.00	Lab sample No.	A20/1468



Key: ———— Top ---------- Base

Description:	Brown Sandy Gravelly Clay		
Initial Condition:	Unsoaked		
Moisture Content (%):	16	Bulk Density (Mg/m^3):	2.13
Surcharge (kg):	4	Dry Density (Mg/m^3):	1.83
% Material >20mm:	5.6		
Method of compaction:	Static Compaction Method 2		

Test Result	Top	Base
CBR %	**2.1**	**2.1**
Moisture Content %	16	17

Persons authorized to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Ltd Materials Laboratory

Approved by	Date	Page No.
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IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111323 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP01

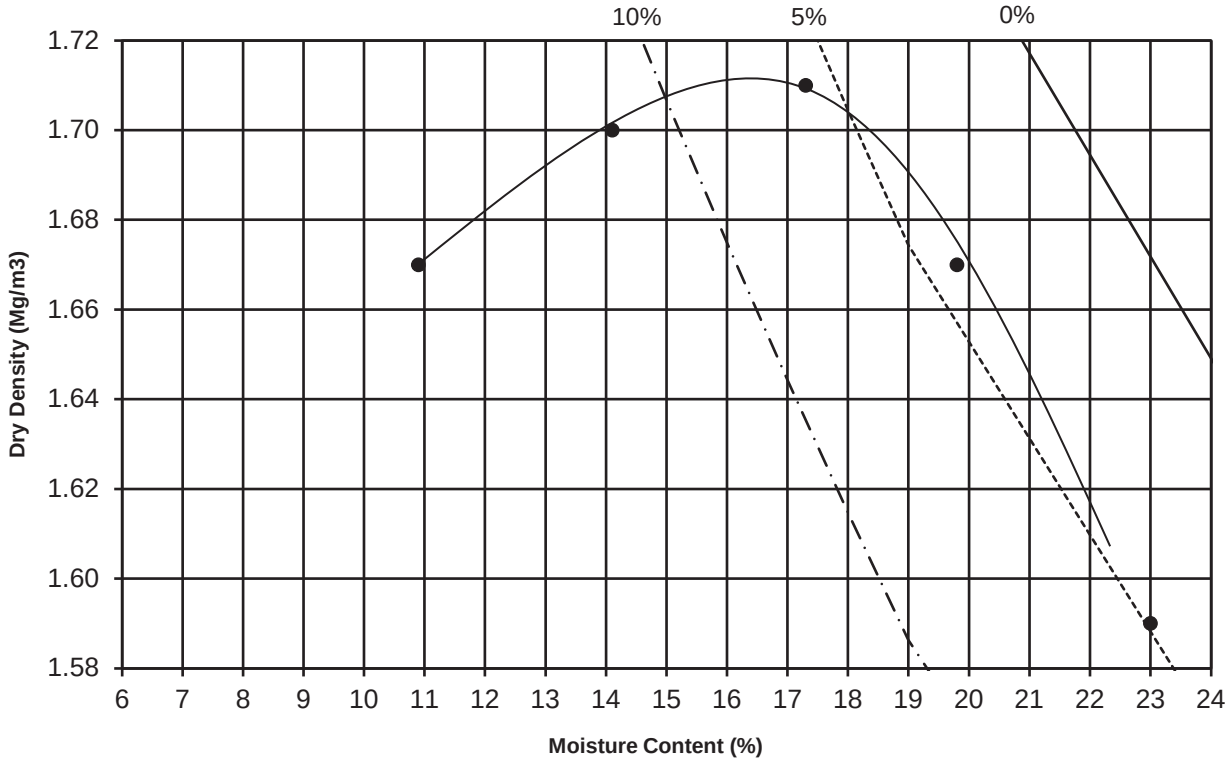
Sample No. AA131859 Depth (m) 1 Material Type B

Lab sample no. A20/1452 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 18/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.67	1.59	1.71	1.70	1.67	0.00	
Moisture Content (%)	20	23	17	14.1	11	0	



Maximum Dry Density (Mg/m^3): 1.71 Optimum Moisture Content (%): 17

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 3.6

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

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	H Byrne	23/05/20	1 of 1

IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111297 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP03

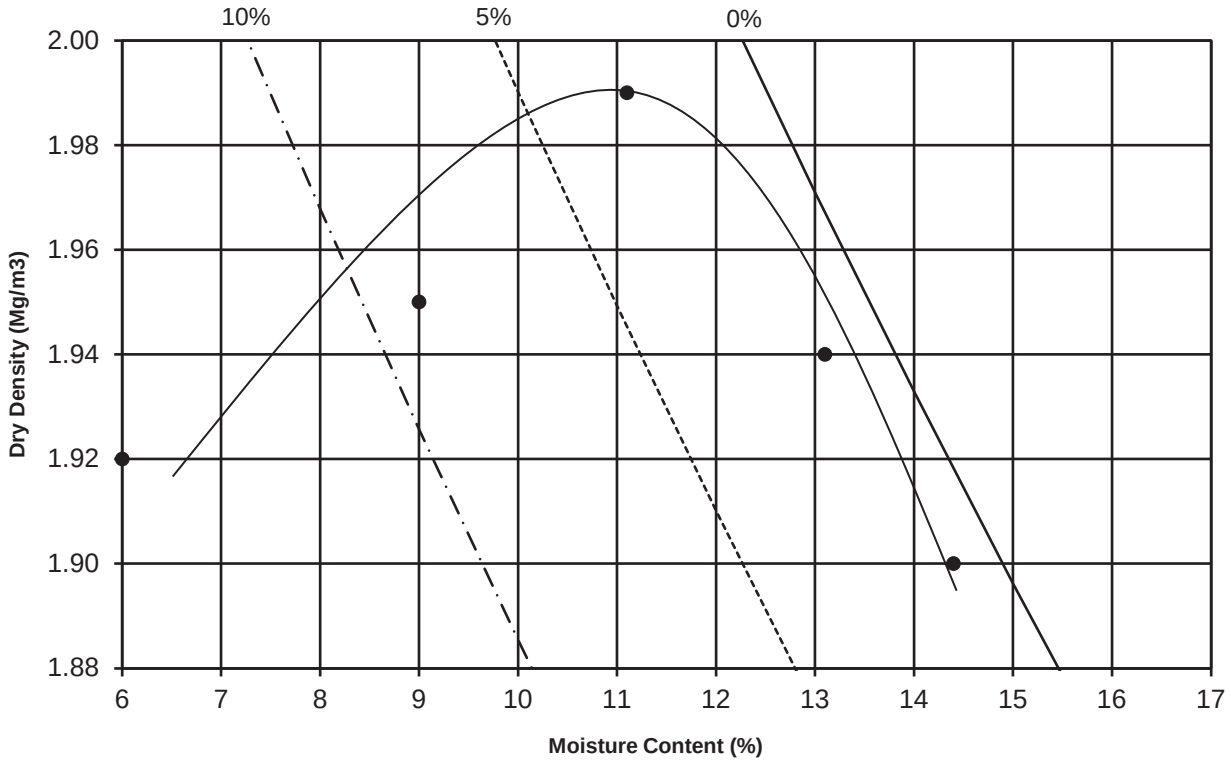
Sample No. AA131869 Depth (m) 1 Material Type B

Lab sample no. A20/1453 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.90	1.94	1.99	1.95	1.92	0.00	
Moisture Content (%)	14	13	11	9.0	6.0	0	



Maximum Dry Density (Mg/m^3): 1.99 Optimum Moisture Content (%): 11

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 33

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Materials Laboratory	Approved by	Date	Page
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IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111298 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP05

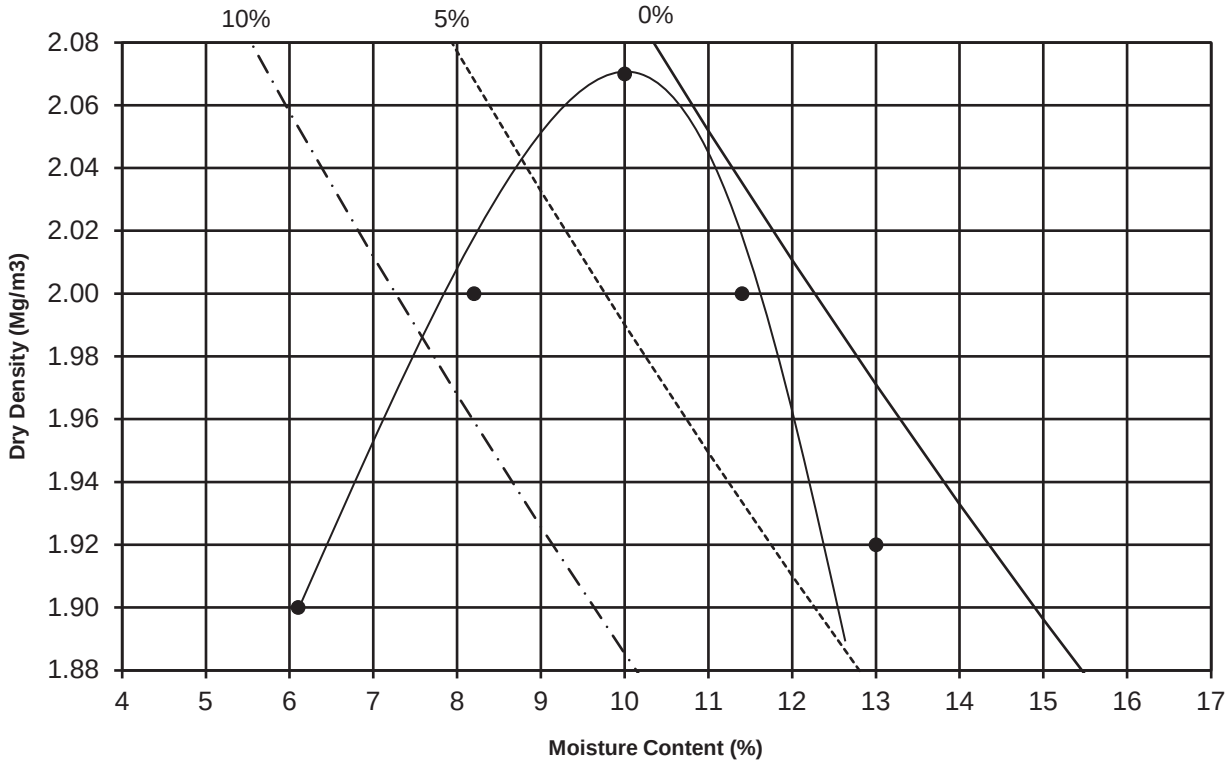
Sample No. AA131873 Depth (m) 1 Material Type B

Lab sample no. A20/1455 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	2.00	2.07	2.00	1.90	1.92	0.00	
Moisture Content (%)	11	10	8	6.1	13.0	0	



Maximum Dry Density (Mg/m^3): 2.07 Optimum Moisture Content (%): 10

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 45

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111296 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP07

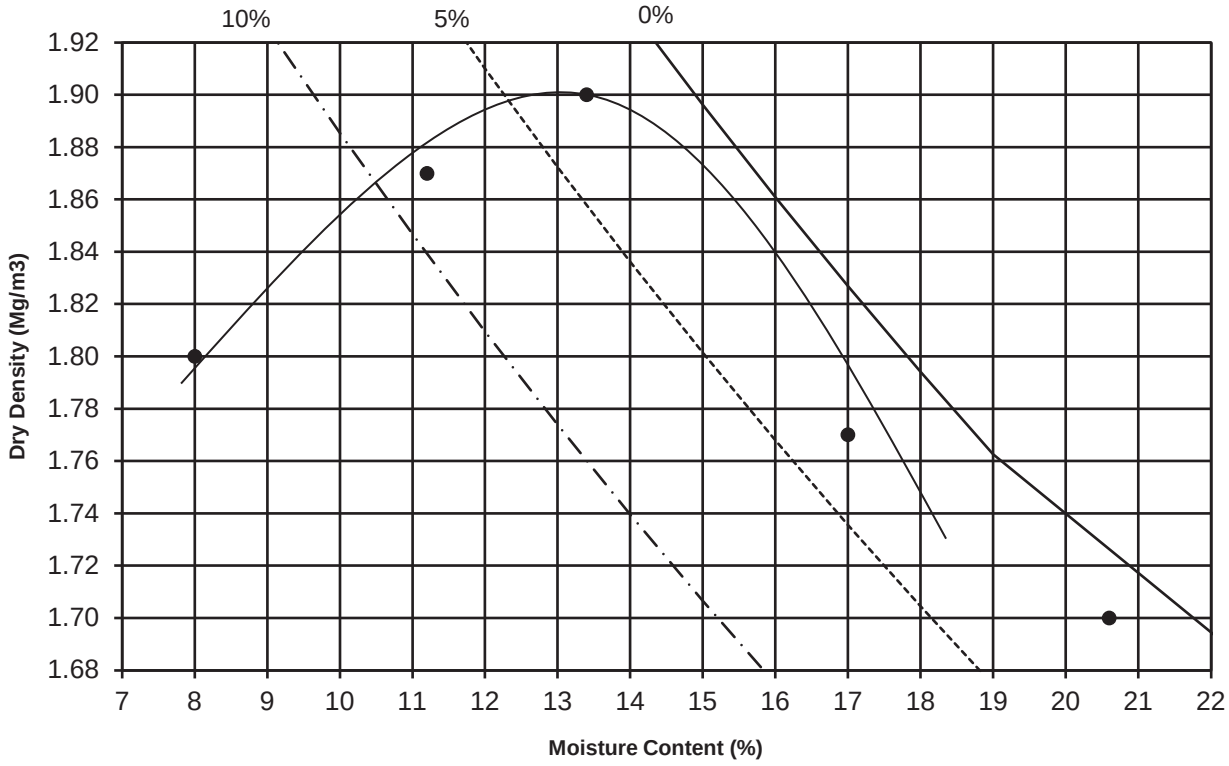
Sample No. AA131861 Depth (m) 1 Material Type B

Lab sample no. A20/1457 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.90	1.87	1.80	1.77	1.70	0.00	
Moisture Content (%)	13	11	8.0	17	21	0	



Maximum Dry Density (Mg/m^3): 1.90 Optimum Moisture Content (%): 13

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 18

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

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IGSL Ltd
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M7 Business Park
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Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111325 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP09

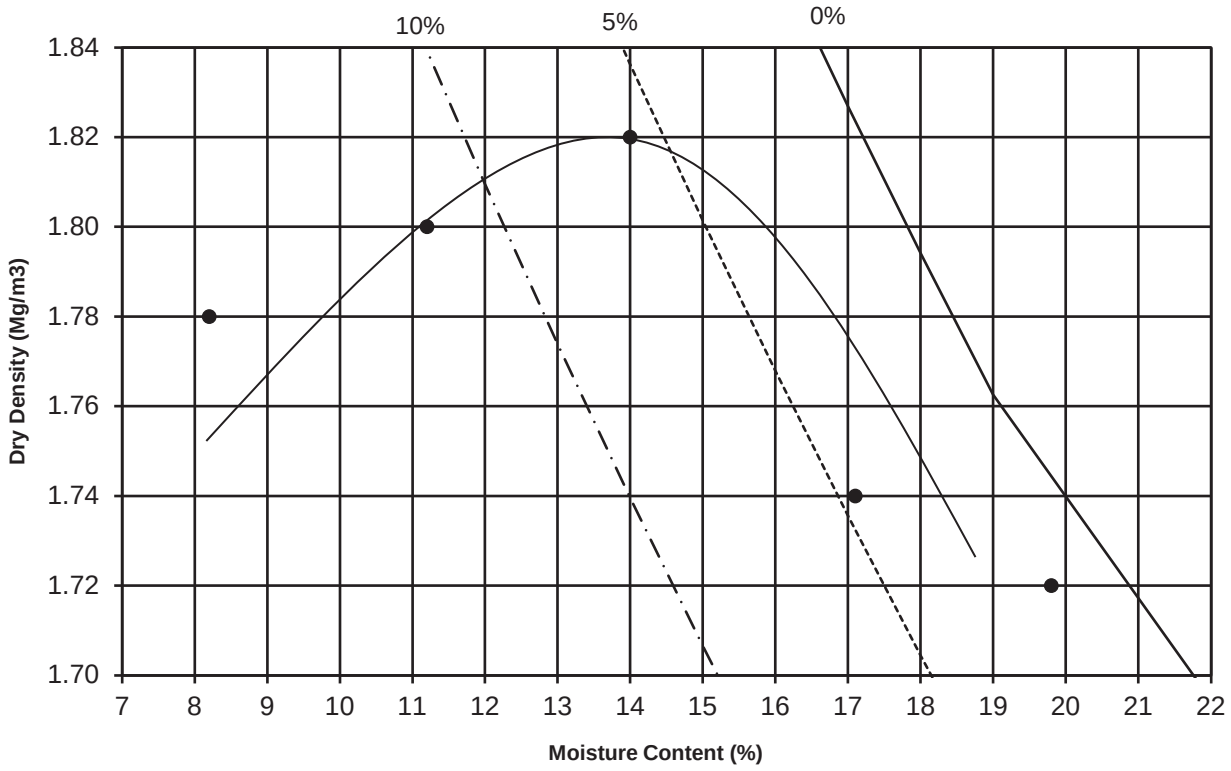
Sample No. AA131876 Depth (m) 1 Material Type B

Lab sample no. A20/1458 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.72	1.74	1.80	1.82	1.78	0.00	
Moisture Content (%)	20	17	11	14	8.2	0	



Maximum Dry Density (Mg/m^3): 1.82 Optimum Moisture Content (%): 14

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 14

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

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IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111294 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP11

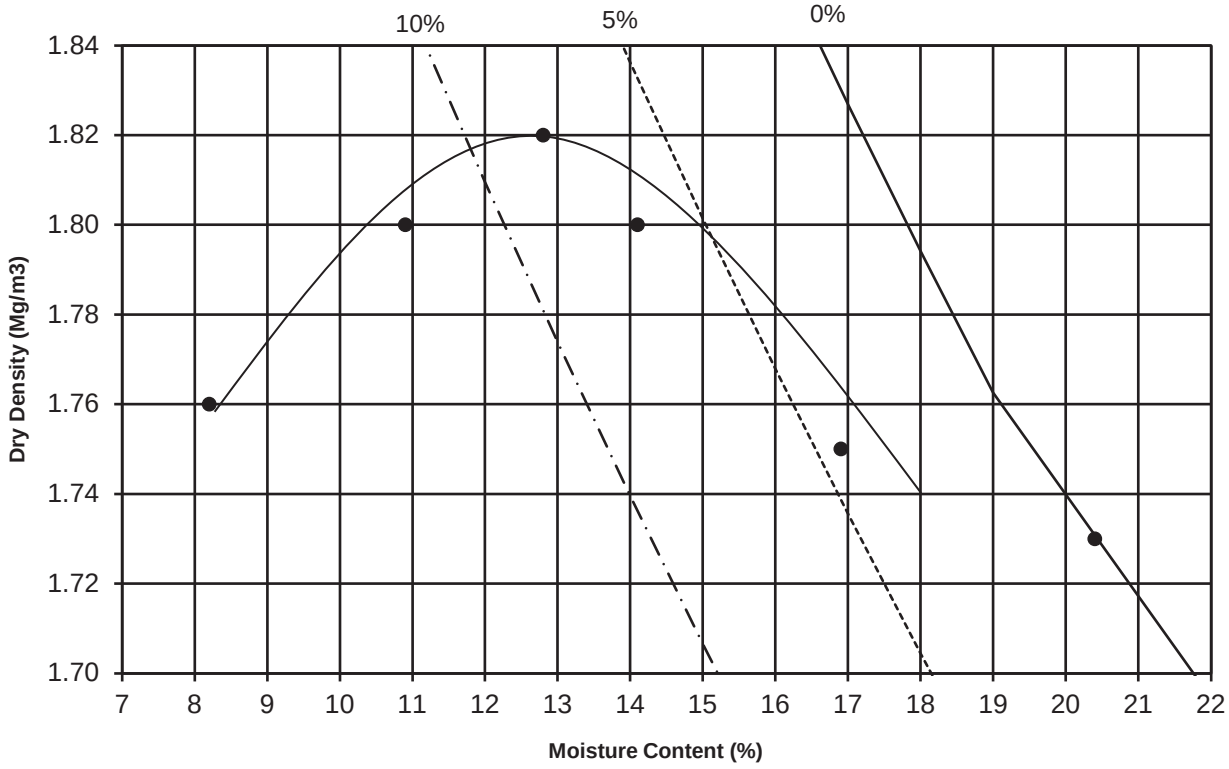
Sample No. AA131888 Depth (m) 1 Material Type B

Lab sample no. A20/1460 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.73	1.75	1.80	1.80	1.76	1.82	
Moisture Content (%)	20	17	14	11	8.2	13	



Maximum Dry Density (Mg/m^3): 1.82 Optimum Moisture Content (%): 13

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 10

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111324 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP13

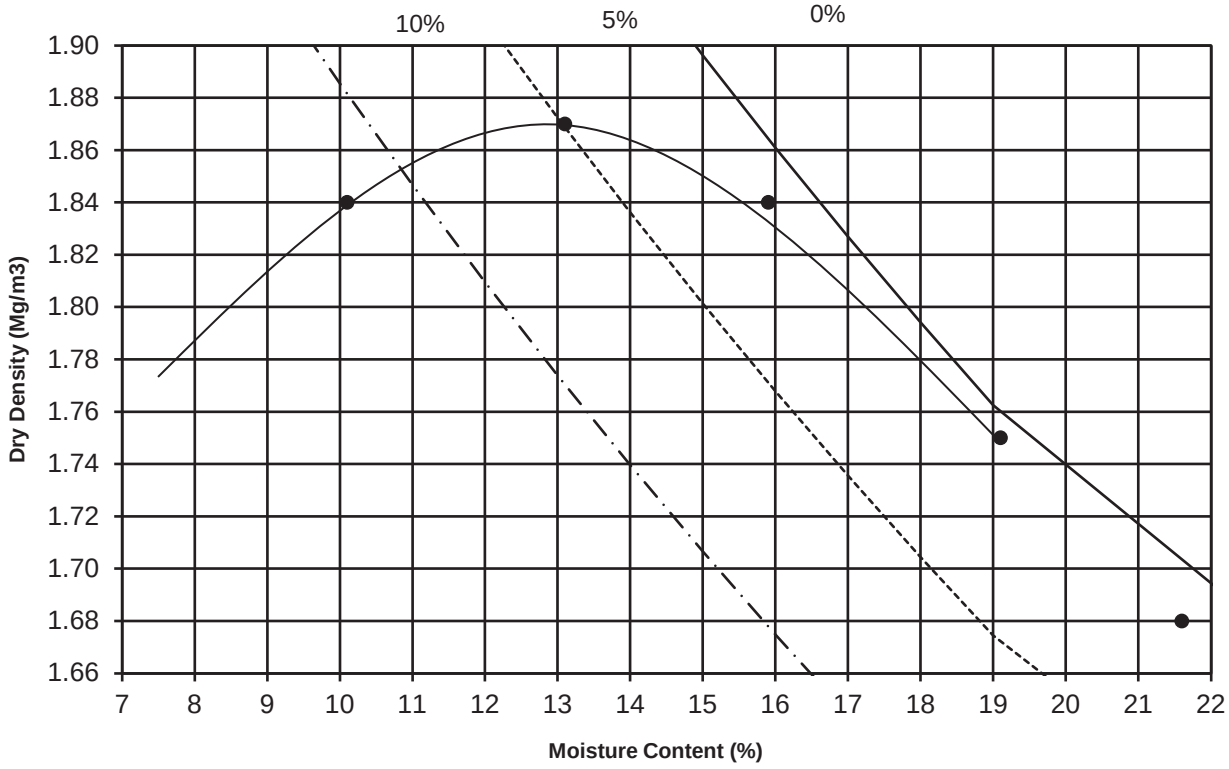
Sample No. AA131866 Depth (m) 1 Material Type B

Lab sample no. A20/1462 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.68	1.75	1.84	1.87	1.84	0.00	
Moisture Content (%)	22	19	16	13	10.1	0	



Maximum Dry Density (Mg/m^3): 1.87 Optimum Moisture Content (%): 13

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 9

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

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	H Byrne	23/05/20	1 of 1

IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111295 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP15

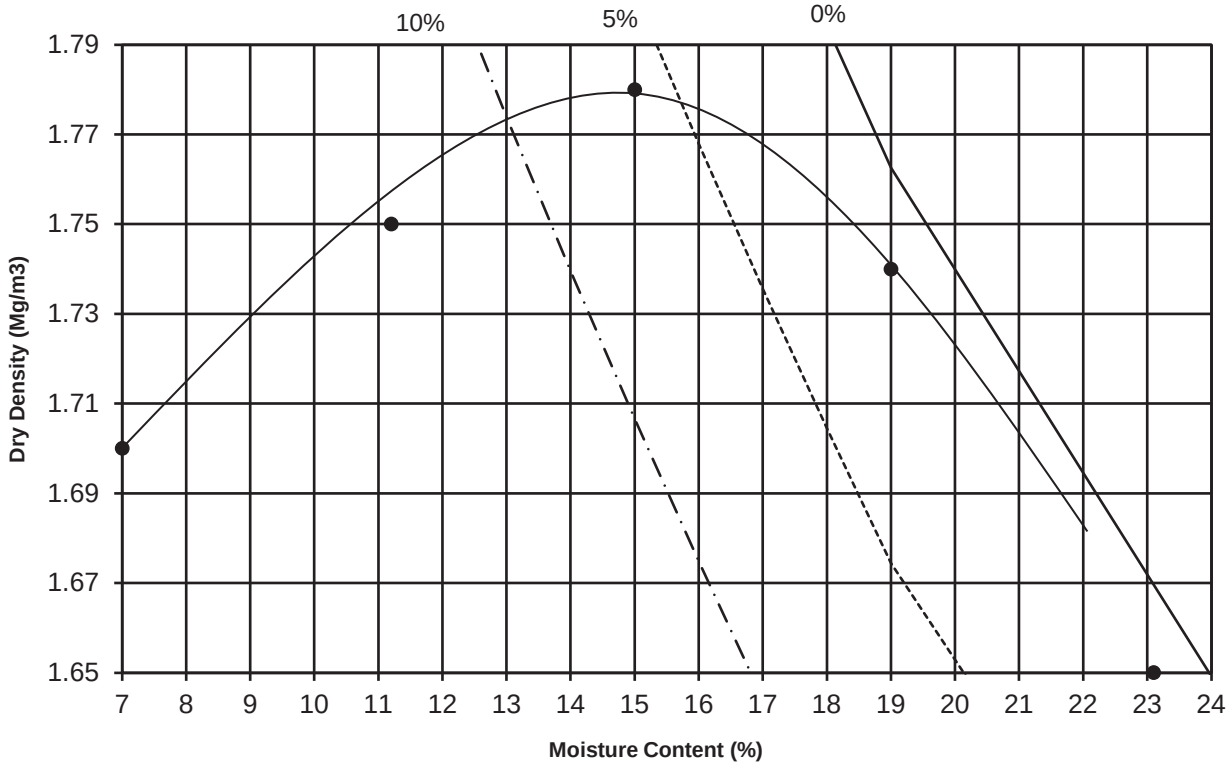
Sample No. AA131851 Depth (m) 1 Material Type B

Lab sample no. A20/1465 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 18/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.65	1.74	1.78	1.75	1.70	0.00	
Moisture Content (%)	23	19	15	11	7.0	0	



Maximum Dry Density (Mg/m^3): 1.78 Optimum Moisture Content (%): 15

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 5

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

IGSL Materials Laboratory	Approved by	Date	Page
	H Byrne	23/05/20	1 of 1

IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111292 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP18

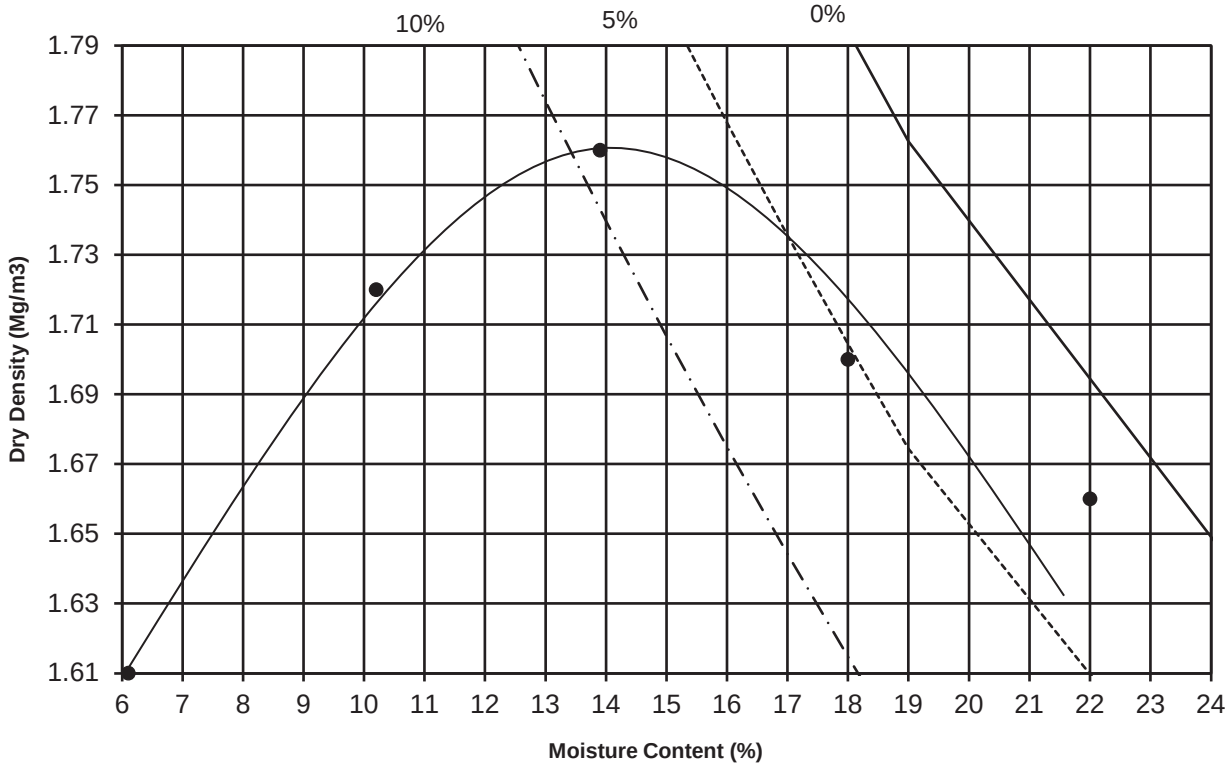
Sample No. AA131897 Depth (m) 1 Material Type B

Lab sample no. A20/1467 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 14/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.66	1.70	1.76	1.72	1.61	0.00	
Moisture Content (%)	22	18	14	10	6.1	0	



Maximum Dry Density (Mg/m^3): 1.76 Optimum Moisture Content (%): 14

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 4

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

IGSL Materials Laboratory	Approved by	Date	Page
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IGSL Ltd
Materials Laboratory
M7 Business Park
Naas
Co. Kildare

Test Report

Dry Density/Moisture Content Relationship

Tested in accordance with BS1377:Part 4:1990

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

Report No. R111293 Contract No. 22473

Contract Name: IDA Business Park Donore Rd Drogheda

Lab Contract No. Location: TP19

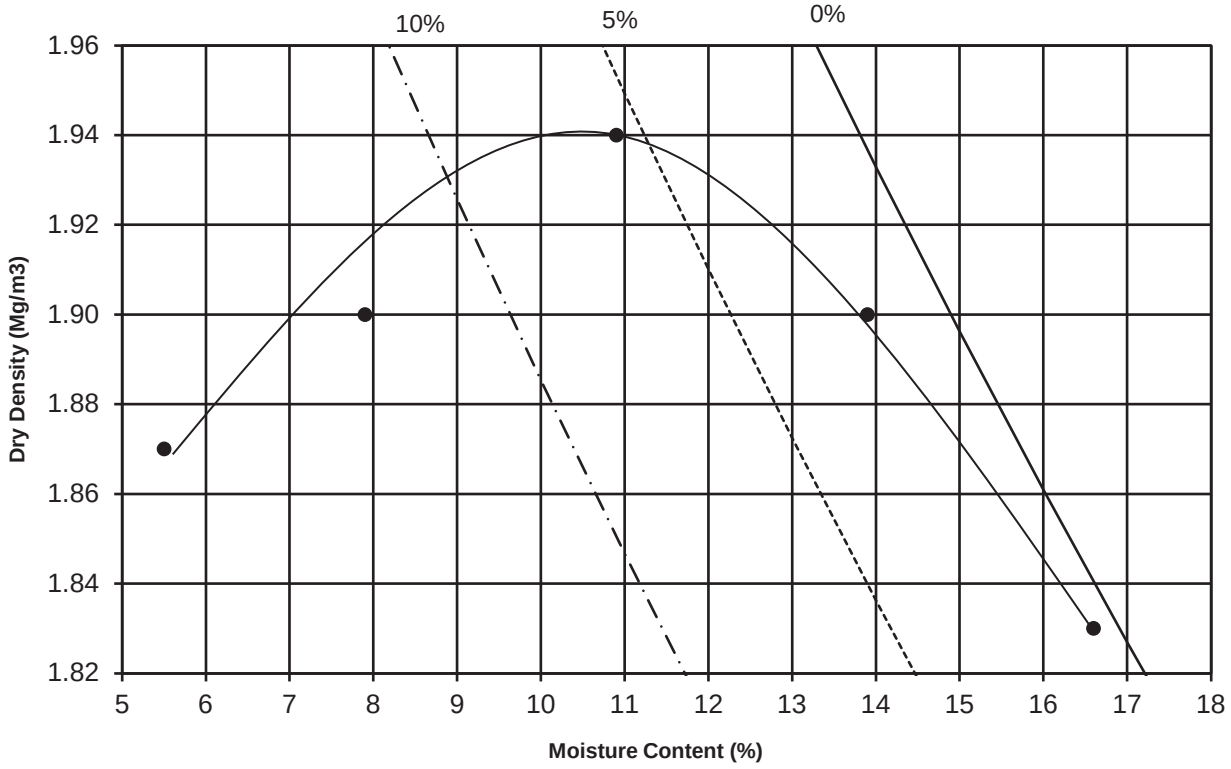
Sample No. AA131899 Depth (m) 1 Material Type B

Lab sample no. A20/1468 Customer: CSE

Date Received: 07/05/2020 Test Method: 2.5 KG Rammer

Date Tested: 13/05/2020 BS1377:Part 4:1990 3.3

Dry Density (Mg/m^3)	1.83	1.87	1.90	1.94	1.90	0.00	
Moisture Content (%)	17	6	14	11	7.9	0	



Maximum Dry Density (Mg/m^3): 1.94 Optimum Moisture Content (%): 11

Description: Brown sandy gravelly CLAY

Sample Preparation: Material passing 20mm ~~Single~~ / Separate samples used

Particle Density (Mg/m^3): 2.65 Particle Density: Assumed

% retained on 20/37.5mm sieve: 6

The result relates to the specimen tested.
Opinions and interpretations are outside the scope of accreditation

Persons authorised to approve reports
J Barrett (Quality Manager)
H Byrne (Laboratory Manager)

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 16 June 2020
Test Report Ref: TR 734086

Order No: 17708

Contract: Drogheda

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Frost Heave of Unbound Aggregate in accordance with **BS 812: Part 124: 2009 - Annex B (Use of Comparator Specimens)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S87771**
Client Ref. No:	**TP15 - 0.8-1.2M**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**21/05/2020**
Date of Start of Test:	**02/06/2020**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**MW**
Material Description:	**Soily Clay**
Target Specification	**SHW Series 800: clause 801.8**

RESULTS:

Were any unrepresentative lumps present? No

Frost Heave Test Result:

Comparator Specimen - Maximum Heave Observed in 96 hours (mm)		
Comparator Specimen 1	12.5	*(nearest 0.5mm)*
Comparator Specimen 2	13.5	*(nearest 0.5mm)*
Comparator Specimen 3	13.0	*(nearest 0.5mm)*
Mean	**13.0**	*(nearest 0.1mm)*
		(limits: 13.6 +/- 4mm)
Test Specimen - Maximum Heave Observed in 96 hours (mm)		
Test Specimen 1	23.0	*(nearest 0.5mm)*
Test Specimen 2	25.0	*(nearest 0.5mm)*
Test Specimen 3	24.5	*(nearest 0.5mm)*
Range of Test Specimens Maximum Heave	2.0	*(should not exceed 6mm)*
Mean Frost Heave	**24.2**	*(nearest 0.1mm)*

In accordance with SHW Series 800: clause 801.8 the sample is classified as being
Frost Susceptible (mean frost heave > 15mm)

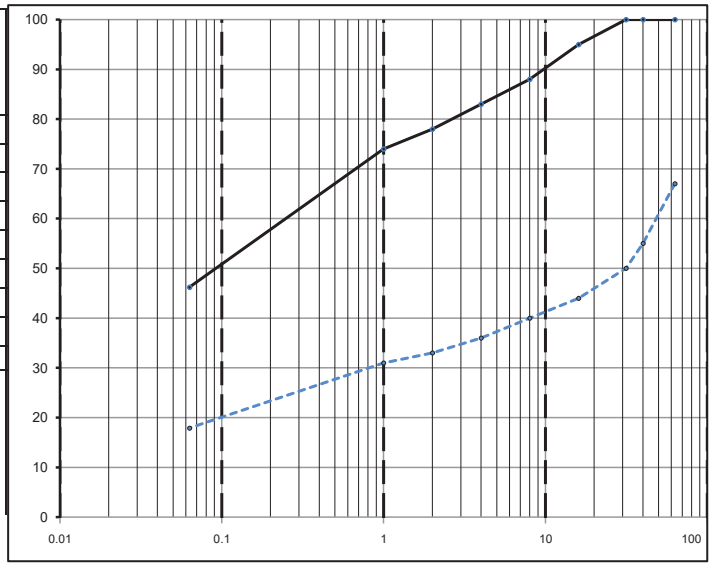
RESULTS CONTINUED:

Laboratory Dry Density & Water Content Test Result

Maximum Dry Density	1.78 Mg/m3
Optimum Water Content	16 %
Actual Dry Density	1.78 Mg/m3
Actual Water Content	16 %

Particle Size Distribution Test Result

BS Test Sieve Nominal Aperture	As Received Test Portion % Passing	Stable Test Portion % Passing
63.0 mm	67	100
40.0 mm	55	100
31.5 mm	50	100
16.0 mm	44	95
8.0 mm	40	88
4.0 mm	36	83
2.0 mm	33	78
1.0 mm	31	74
0.063 mm	17.9	46.2



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These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Dyfed Jones
Aggregate Team Coordinator

I.G.S.L. Ltd
Unit J5, M7 Business Park
Newhall, NAAS
Co Kildare
Rep of Ireland
Vat No. IE9795751O

Date: 16 June 2020
Test Report Ref: TR 734085

Order No: 17708

Contract: Drogheda

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Frost Heave of Unbound Aggregate in accordance with **BS 812: Part 124: 2009 - Annex B (Use of Comparator Specimens)**

SAMPLE DETAILS:

Certificate of sampling received:	**No**
Laboratory Ref. No:	**S87771**
Client Ref. No:	**TP18 - 0.8-1.2M**
Date and Time of Sampling:	**Unknown**
Date of Receipt at Lab:	**21/05/2020**
Date of Start of Test:	**02/06/2020**
Sampling Location:	**Unknown**
Name of Source:	**Unknown**
Method of Sampling:	**Unknown**
Sampled By:	**Client**
Tested By:	**MW**
Material Description:	**Soily Clay**
Target Specification	**SHW Series 800: clause 801.8**

RESULTS:

Were any unrepresentative lumps present? No

Frost Heave Test Result:

Comparator Specimen - Maximum Heave Observed in 96 hours (mm)		
Comparator Specimen 1	12.5	*(nearest 0.5mm)*
Comparator Specimen 2	13.5	*(nearest 0.5mm)*
Comparator Specimen 3	13.0	*(nearest 0.5mm)*
Mean	**13.0**	*(nearest 0.1mm)*
		(limits: 13.6 +/- 4mm)
Test Specimen - Maximum Heave Observed in 96 hours (mm)		
Test Specimen 1	20.5	*(nearest 0.5mm)*
Test Specimen 2	22.5	*(nearest 0.5mm)*
Test Specimen 3	20.0	*(nearest 0.5mm)*
Range of Test Specimens Maximum Heave	2.5	*(should not exceed 6mm)*
Mean Frost Heave	**21.0**	*(nearest 0.1mm)*

In accordance with SHW Series 800: clause 801.8 the sample is classified as being
Frost Susceptible (mean frost heave > 15mm)

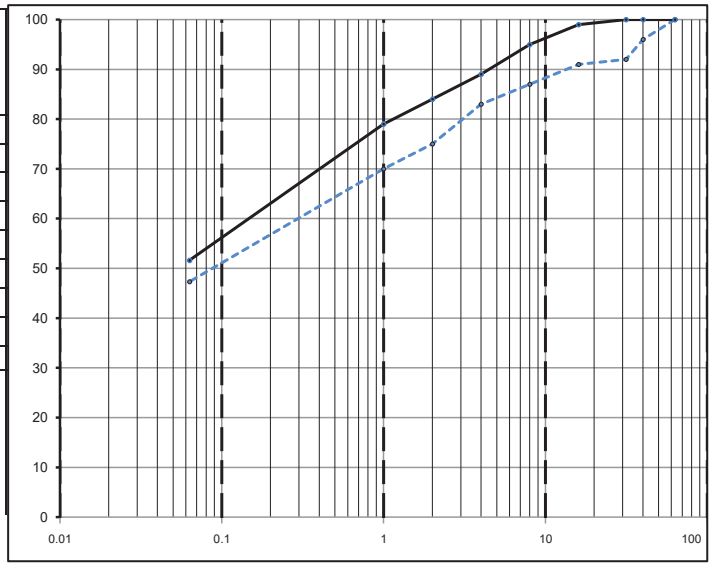
RESULTS CONTINUED:

Laboratory Dry Density & Water Content Test Result

Maximum Dry Density	1.81 Mg/m3
Optimum Water Content	14.5 %
Actual Dry Density	1.81 Mg/m3
Actual Water Content	14.6 %

Particle Size Distribution Test Result

BS Test Sieve Nominal Aperture	As Received Test Portion % Passing	Stable Test Portion % Passing
63.0 mm	100	100
40.0 mm	96	100
31.5 mm	92	100
16.0 mm	91	99
8.0 mm	87	95
4.0 mm	83	89
2.0 mm	75	84
1.0 mm	70	79
0.063 mm	47.3	51.6



This test report shall not be reproduced, except in full, without the written approval of Celtest Company Limited.

These results relate only to the items tested.

Comments:
None

Report checked and approved by:

Dyfed Jones
Aggregate Team Coordinator

Appendix 6 Laboratory Test Results (Environmental

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-13348-1		
Initial Date of Issue:	05-Jun-2020		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	22473 IDA Business Park Donor Road, Drogheda		
Quotation No.:	Q19-18246	**Date Received:**	28-May-2020
Order No.:		**Date Instructed:**	28-May-2020
No. of Samples:	10		
Turnaround (Wkdays):	7	**Results Due:**	05-Jun-2020
Date Approved:	05-Jun-2020		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Leachate

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL				**Chemtest Job No.:**		20-13348	20-13348	20-13348	20-13348	20-13348
Quotation No.: Q19-18246				**Chemtest Sample ID.:**		1009424	1009427	1009428	1009430	1009432
Order No.:				Client Sample Ref.:		RILTA	RILTA	RILTA	RILTA	RILTA
				Sample Location:		BH2	BH7	BH11	BH12	BH15
				Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):		1.00	1	1	0.5	1.0
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**					
pH	U	1010	10:1		N/A	8.6	8.7	8.5	8.2	8.6
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050	1.7	0.23	< 0.050	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.31	22	2.7	< 0.10	< 0.10
Boron (Dissolved)	U	1450	10:1	µg/l	20	< 20	< 20	< 20	24	< 20
Boron (Dissolved)	U	1450	10:1	mg/kg	0.20	< 0.20	< 0.20	< 0.20	0.24	< 0.20

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL					**Chemtest Job No.:**	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348
Quotation No.: Q19-18246					**Chemtest Sample ID.:**	1009424	1009425	1009426	1009427	1009428	1009429	1009430	1009431	1009432
Order No.:					Client Sample Ref.:	RILTA	BRE	BRE	RILTA	RILTA		RILTA	BRE	RILTA
					Sample Location:	BH2	BH2	BH5	BH7	BH11	BH11	BH12	BH12	BH15
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	2	1	1	1	3	0.5	1.2	1.0
					Asbestos Lab:	COVENTRY			COVENTRY	COVENTRY		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192		N/A		-			-	-		-		-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected			No Asbestos Detected	No Asbestos Detected		No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A		-			-	-		-		-
Moisture	N	2030	%	0.020		16	10	14	13	13	12	16	13	8.8
pH (2.5:1)	N	2010		4.0			[A] 9.2	[A] 8.5			[A] 8.7		[A] 8.5	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		< 0.40			< 0.40	< 0.40		< 0.40		< 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010			< 0.010	< 0.010			< 0.010		< 0.010	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010			< 0.010	< 0.010			< 0.010		< 0.010	
Total Sulphur	M	2175	%	0.010			[A] 0.023	[A] 0.019			[A] 0.023		[A] 0.021	
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Chloride (Water Soluble)	M	2220	g/l	0.010			[A] < 0.010	[A] < 0.010			[A] < 0.010		[A] < 0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010			< 0.010	< 0.010			< 0.010		< 0.010	
Cyanide (Total)	M	2300	mg/kg	0.50		[A] < 0.50			[A] < 0.50	[A] < 0.50		[A] < 0.50		[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		[A] 1.5			[A] 3.0	[A] 1.3		[A] 1.4		[A] 3.8
Ammonium (Water Soluble)	M	2120	g/l	0.01			< 0.01	< 0.01			< 0.01		< 0.01	
Sulphate (Acid Soluble)	M	2430	%	0.010		[A] 0.012	[A] 0.020	[A] < 0.010	[A] 0.018	[A] < 0.010	[A] 0.016	[A] < 0.010	[A] < 0.010	[A] 0.017
Arsenic	M	2450	mg/kg	1.0		12			19	13		17		18
Barium	M	2450	mg/kg	10		83			99	130		110		150
Cadmium	M	2450	mg/kg	0.10		0.92			1.2	0.69		1.4		0.81
Chromium	M	2450	mg/kg	1.0		21			25	35		29		27
Molybdenum	M	2450	mg/kg	2.0		2.9			3.6	2.5		4.0		3.3
Antimony	N	2450	mg/kg	2.0		< 2.0			< 2.0	2.0		2.2		< 2.0
Copper	M	2450	mg/kg	0.50		28			29	35		36		27
Mercury	M	2450	mg/kg	0.10		< 0.10			< 0.10	0.36		0.11		< 0.10
Nickel	M	2450	mg/kg	0.50		42			49	49		59		45
Lead	M	2450	mg/kg	0.50		17			17	32		24		20
Selenium	M	2450	mg/kg	0.20		0.35			0.31	0.72		0.66		0.61
Zinc	M	2450	mg/kg	0.50		53			55	110		63		56
Chromium (Trivalent)	N	2490	mg/kg	1.0		21			25	35		29		27
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50			< 0.50	< 0.50		< 0.50		< 0.50
Total Organic Carbon	M	2625	%	0.20		[A] < 0.20			[A] 0.67	[A] 0.37		[A] 0.46		[A] < 0.20
Mineral Oil	N	2670	mg/kg	10		< 10			< 10	< 10		< 10		< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL					Chemtest Job No.:	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348
Quotation No.: Q19-18246					Chemtest Sample ID.:	1009424	1009425	1009426	1009427	1009428	1009429	1009430	1009431	1009432
Order No.:					Client Sample Ref.:	RILTA	BRE	BRE	RILTA	RILTA		RILTA	BRE	RILTA
					Sample Location:	BH2	BH2	BH5	BH7	BH11	BH11	BH12	BH12	BH15
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	2	1	1	1	3	0.5	1.2	1.0
					Asbestos Lab:	COVENTRY			COVENTRY	COVENTRY		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0			[A] < 5.0	[A] < 5.0		[A] < 5.0		[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0			[A] < 5.0	[A] < 5.0		[A] < 5.0		[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		[A] < 10			[A] < 10	[A] < 10		[A] < 10		[A] < 10
Benzene	M	2760	µg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Toluene	M	2760	µg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		[A] < 1.0			[A] < 1.0	[A] < 1.0		[A] < 1.0		[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Acenaphthene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Fluorene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Phenanthrene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Benzo[j]fluoranthene	N	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Anthracene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Fluoranthene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Pyrene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Chrysene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10
Coronene	N	2800	mg/kg	0.10		< 0.10			< 0.10	< 0.10		< 0.10		< 0.10

Results - Soil

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL			**Chemtest Job No.:**		20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348	20-13348
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1009424	1009425	1009426	1009427	1009428	1009429	1009430	1009431	1009432
Order No.:			Client Sample Ref.:		RILTA	BRE	BRE	RILTA	RILTA		RILTA	BRE	RILTA
			Sample Location:		BH2	BH2	BH5	BH7	BH11	BH11	BH12	BH12	BH15
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.00	2	1	1	1	3	0.5	1.2	1.0
			Asbestos Lab:		COVENTRY			COVENTRY	COVENTRY		COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0			< 2.0	< 2.0		< 2.0		< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010			[A] < 0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10			[A] < 0.10	[A] < 0.10		[A] < 0.10		[A] < 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30			< 0.30	< 0.30		< 0.30		< 0.30

Results - Soil

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL			**Chemtest Job No.:**		20-13348
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1009433
Order No.:			Client Sample Ref.:		BRE
			Sample Location:		BH15
			Sample Type:		SOIL
			Top Depth (m):		3.0
			Asbestos Lab:		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	
Asbestos Identification	U	2192	%	0.001	
ACM Detection Stage	U	2192		N/A	
Moisture	N	2030	%	0.020	13
pH (2.5:1)	N	2010		4.0	[A] 8.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	
Magnesium (Water Soluble)	N	2120	g/l	0.010	< 0.010
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010
Total Sulphur	M	2175	%	0.010	[A] 0.027
Sulphur (Elemental)	M	2180	mg/kg	1.0	
Chloride (Water Soluble)	M	2220	g/l	0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010
Cyanide (Total)	M	2300	mg/kg	0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	
Ammonium (Water Soluble)	M	2120	g/l	0.01	< 0.01
Sulphate (Acid Soluble)	M	2430	%	0.010	[A] < 0.010
Arsenic	M	2450	mg/kg	1.0	
Barium	M	2450	mg/kg	10	
Cadmium	M	2450	mg/kg	0.10	
Chromium	M	2450	mg/kg	1.0	
Molybdenum	M	2450	mg/kg	2.0	
Antimony	N	2450	mg/kg	2.0	
Copper	M	2450	mg/kg	0.50	
Mercury	M	2450	mg/kg	0.10	
Nickel	M	2450	mg/kg	0.50	
Lead	M	2450	mg/kg	0.50	
Selenium	M	2450	mg/kg	0.20	
Zinc	M	2450	mg/kg	0.50	
Chromium (Trivalent)	N	2490	mg/kg	1.0	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	
Total Organic Carbon	M	2625	%	0.20	
Mineral Oil	N	2670	mg/kg	10	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	

Results - Soil

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL			**Chemtest Job No.:**		20-13348
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1009433
Order No.:			Client Sample Ref.:		BRE
			Sample Location:		BH15
			Sample Type:		SOIL
			Top Depth (m):		3.0
			Asbestos Lab:		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	
Benzene	M	2760	µg/kg	1.0	
Toluene	M	2760	µg/kg	1.0	
Ethylbenzene	M	2760	µg/kg	1.0	
m & p-Xylene	M	2760	µg/kg	1.0	
o-Xylene	M	2760	µg/kg	1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	
Naphthalene	M	2800	mg/kg	0.10	
Acenaphthylene	N	2800	mg/kg	0.10	
Acenaphthene	M	2800	mg/kg	0.10	
Fluorene	M	2800	mg/kg	0.10	
Phenanthrene	M	2800	mg/kg	0.10	
Benzo[j]fluoranthene	N	2800	mg/kg	0.10	
Anthracene	M	2800	mg/kg	0.10	
Fluoranthene	M	2800	mg/kg	0.10	
Pyrene	M	2800	mg/kg	0.10	
Benzo[a]anthracene	M	2800	mg/kg	0.10	
Chrysene	M	2800	mg/kg	0.10	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	
Benzo[a]pyrene	M	2800	mg/kg	0.10	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	
Coronene	N	2800	mg/kg	0.10	

Results - Soil

Project: 22473 IDA Business Park Donor Road, Drogheda

Client: IGSL			**Chemtest Job No.:**		20-13348
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1009433
Order No.:			Client Sample Ref.:		BRE
			Sample Location:		BH15
			Sample Type:		SOIL
			Top Depth (m):		3.0
			Asbestos Lab:		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total Of 17 PAH's	N	2800	mg/kg	2.0	
PCB 28	U	2815	mg/kg	0.010	
PCB 52	U	2815	mg/kg	0.010	
PCB 90+101	U	2815	mg/kg	0.010	
PCB 118	U	2815	mg/kg	0.010	
PCB 153	U	2815	mg/kg	0.010	
PCB 138	U	2815	mg/kg	0.010	
PCB 180	U	2815	mg/kg	0.010	
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	
Total Phenols	M	2920	mg/kg	0.30	

Results - Single Stage WAC

Project: 22473 IDA Business Park Donor Road, Drogheda

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-13348						
Chemtest Sample ID:	1009424						
Sample Ref:	RILTA						
Sample ID:							
Sample Location:	BH2						
Top Depth(m):	1.00						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] < 0.20	3	5	6
Loss On Ignition	2610	M	%	2.7	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0033	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	0.0019	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	39	390	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.6	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donor Road, Drogheda

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-13348						
Chemtest Sample ID:	1009427						
Sample Ref:	RILTA						
Sample ID:							
Sample Location:	BH7						
Top Depth(m):	1						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.67	3	5	6
Loss On Ignition	2610	M	%	2.9	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.022	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0043	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	0.0020	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0060	0.060	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.38	3.8	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	49	490	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.0	50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donor Road, Drogheda

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-13348						
Chemtest Sample ID:	1009428						
Sample Ref:	RILTA						
Sample ID:							
Sample Location:	BH11						
Top Depth(m):	1						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.37	3	5	6
Loss On Ignition	2610	M	%	3.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.022	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0041	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	0.0020	< 0.050	0.5	10	70
Copper	1450	U	0.0013	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0013	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.29	2.9	10	150	500
Sulphate	1220	U	1.4	14	1000	20000	50000
Total Dissolved Solids	1020	N	34	340	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.4	54	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donor Road, Drogheda

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-13348						
Chemtest Sample ID:	1009430						
Sample Ref:	RILTA						
Sample ID:							
Sample Location:	BH12						
Top Depth(m):	0.5						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.46	3	5	6
Loss On Ignition	2610	M	%	3.5	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.023	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0060	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0013	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0013	< 0.50	4	50	200
Chloride	1220	U	21	210	800	15000	25000
Fluoride	1220	U	0.14	1.4	10	150	500
Sulphate	1220	U	16	160	1000	20000	50000
Total Dissolved Solids	1020	N	40	400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.2	52	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	16

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donor Road, Drogheda

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-13348						
Chemtest Sample ID:	1009432						
Sample Ref:	RILTA						
Sample ID:							
Sample Location:	BH15						
Top Depth(m):	1.0						
Bottom Depth(m):							
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] < 0.20	3	5	6
Loss On Ignition	2610	M	%	2.4	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.024	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.011	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	0.0013	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.017	0.17	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0069	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.27	2.7	10	150	500
Sulphate	1220	U	2.2	22	1000	20000	50000
Total Dissolved Solids	1020	N	57	570	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	8.8

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1009424	RILTA		BH2		A	Amber Glass 250ml
1009424	RILTA		BH2		A	Plastic Tub 500g
1009425	BRE		BH2		A	Amber Glass 250ml
1009425	BRE		BH2		A	Plastic Tub 500g
1009426	BRE		BH5		A	Amber Glass 250ml
1009426	BRE		BH5		A	Plastic Tub 500g
1009427	RILTA		BH7		A	Amber Glass 250ml
1009427	RILTA		BH7		A	Plastic Tub 500g
1009428	RILTA		BH11		A	Amber Glass 250ml
1009428	RILTA		BH11		A	Plastic Tub 500g
1009429			BH11		A	Amber Glass 250ml
1009429			BH11		A	Plastic Tub 500g
1009430	RILTA		BH12		A	Amber Glass 250ml
1009430	RILTA		BH12		A	Plastic Tub 500g
1009431	BRE		BH12		A	Amber Glass 250ml
1009431	BRE		BH12		A	Plastic Tub 500g
1009432	RILTA		BH15		A	Amber Glass 250ml
1009432	RILTA		BH15		A	Plastic Tub 500g
1009433	BRE		BH15		A	Amber Glass 250ml
1009433	BRE		BH15		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememnt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID

Test Methods

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-12153-1
Initial Date of Issue:	20-May-2020
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	22473 IDA Business Park Donore Road Drogheda (CSE)

Quotation No.:	Q19-18246	**Date Received:**	12-May-2020
Order No.:		**Date Instructed:**	12-May-2020
No. of Samples:	21		
Turnaround (Wkdays):	7	**Results Due:**	20-May-2020
Date Approved:	20-May-2020		

Approved By:

Details: Glynn Harvey, Technical Manager

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Results - Leachate

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL						**Chemtest Job No.:**	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246						**Chemtest Sample ID.:**	1003900	1003902	1003904	1003905	1003907	1003908	1003909	1003911	1003912	1003913	1003914	1003916
Order No.:						Client Sample Ref.:	135455	130493	135450	135467	131867	131864	131871	136853	131890	131883	131878	131892
						Sample Location:	BH3	BH4	BH6	BH9	TP2	TP4	TP6	TP8	TP10	TP12	TP14	TP16
						Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
						Top Depth (m):	0.50	1.00	1.00	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	1.00
						Bottom Depth (m):	0.50	1.00	1.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	0.50	1.00
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**													
pH	U	1010	10:1		N/A		8.3	8.5	8.3	8.2	8.3	8.3	8.4	8.2	8.4	8.1	8.5	8.7
Ammonium	U	1220	10:1	mg/l	0.050		0.067	0.064	0.36	0.072	< 0.050	0.052	< 0.050	< 0.050	< 0.050	0.075	< 0.050	0.051
Ammonium	N	1220	10:1	mg/kg	0.10		0.75	0.74	4.0	0.78	0.33	0.57	0.19	0.28	0.41	0.81	0.45	0.66
Boron (Dissolved)	U	1450	10:1	µg/l	20		< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Boron (Dissolved)	U	1450	10:1	mg/kg	0.20		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Results - Leachate

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL				**Chemtest Job No.:**		20-12153
Quotation No.: Q19-18246				**Chemtest Sample ID.:**		1003917
Order No.:				Client Sample Ref.:		131894
				Sample Location:		TP17
				Sample Type:		SOIL
				Top Depth (m):		0.80
				Bottom Depth (m):		0.80
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**	
pH	U	1010	10:1		N/A	8.5
Ammonium	U	1220	10:1	mg/l	0.050	< 0.050
Ammonium	N	1220	10:1	mg/kg	0.10	0.50
Boron (Dissolved)	U	1450	10:1	µg/l	20	< 20
Boron (Dissolved)	U	1450	10:1	mg/kg	0.20	< 0.20

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Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL					**Chemtest Job No.:**	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246					**Chemtest Sample ID.:**	1003899	1003900	1003901	1003902	1003903	1003904	1003905	1003906	1003907
Order No.:					Client Sample Ref.:	155463	135455	135457	130493	13094	135450	135467	135471	131867
					Sample Location:	BH1	BH3	BH3	BH4	BH4	BH6	BH9	BH9	TP2
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	0.50	2.00	1.00	2.00	1.00	0.50	3.00	0.50
					Bottom Depth (m):	1.00	0.50	2.00	1.00	2.00	1.00	0.50	3.00	1.00
					Asbestos Lab:		COVENTRY		COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192		N/A			-		-		-	-		-
Asbestos Identification	U	2192	%	0.001			No Asbestos Detected		No Asbestos Detected		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A			-		-		-	-		-
Moisture	N	2030	%	0.020	24	15	11	14	9.6	15	19	12	17	
pH (2.5:1)	N	2010		4.0	[A] 7.9		[A] 8.5		[A] 8.3			[A] 8.5		
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		< 0.40		< 0.40		< 0.40	< 0.40		< 0.40	
Magnesium (Water Soluble)	N	2120	g/l	0.010	< 0.010		< 0.010		< 0.010			< 0.010		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.012		< 0.010		0.17			< 0.010		
Total Sulphur	M	2175	%	0.010	[A] 0.040		[A] 0.018		[A] 0.16			[A] 0.027		
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Chloride (Water Soluble)	M	2220	g/l	0.010	[A] < 0.010		[A] < 0.010		[A] < 0.010			[A] < 0.010		
Nitrate (Water Soluble)	N	2220	g/l	0.010	< 0.010		< 0.010		< 0.010			< 0.010		
Cyanide (Total)	M	2300	mg/kg	0.50		[A] < 0.50		[A] < 0.50		[A] < 0.50	[A] < 0.50		[A] < 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		[A] 2.6		[A] 3.1		[A] 2.4	[A] 2.4		[A] 2.4	
Ammonium (Water Soluble)	M	2120	g/l	0.01	0.18		0.02		0.04			0.02		
Sulphate (Acid Soluble)	M	2430	%	0.010	[A] 0.036	[A] 0.014	[A] 0.012	[A] 0.013	[A] 0.051	[A] 0.024	[A] 0.019	[A] 0.018	[A] < 0.010	
Arsenic	M	2450	mg/kg	1.0		20		21		20	18		15	
Barium	M	2450	mg/kg	10		160		140		140	140		100	
Cadmium	M	2450	mg/kg	0.10		1.4		1.6		1.4	0.95		0.90	
Chromium	M	2450	mg/kg	1.0		35		31		32	32		32	
Molybdenum	M	2450	mg/kg	2.0		4.8		5.0		4.4	3.7		3.4	
Antimony	N	2450	mg/kg	2.0		2.0		2.0		2.0	2.5		2.3	
Copper	M	2450	mg/kg	0.50		34		38		36	28		35	
Mercury	M	2450	mg/kg	0.10		0.12		0.10		0.12	0.23		0.18	
Nickel	M	2450	mg/kg	0.50		61		60		58	49		56	
Lead	M	2450	mg/kg	0.50		31		34		40	42		29	
Selenium	M	2450	mg/kg	0.20		0.61		0.90		0.92	0.70		0.97	
Zinc	M	2450	mg/kg	0.50		94		110		120	100		88	
Chromium (Trivalent)	N	2490	mg/kg	1.0		35		31		32	32		32	
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50		< 0.50		< 0.50	< 0.50		< 0.50	
Total Organic Carbon	M	2625	%	0.20		[A] 0.65		[A] 0.44		[A] 0.94	[A] 1.2		[A] 0.46	
Mineral Oil	N	2670	mg/kg	10		< 10		< 10		< 10	< 10		< 10	
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	

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Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL					**Chemtest Job No.:**	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246					**Chemtest Sample ID.:**	1003899	1003900	1003901	1003902	1003903	1003904	1003905	1003906	1003907
Order No.:					Client Sample Ref.:	155463	135455	135457	130493	13094	135450	135467	135471	131867
					Sample Location:	BH1	BH3	BH3	BH4	BH4	BH6	BH9	BH9	TP2
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	0.50	2.00	1.00	2.00	1.00	0.50	3.00	0.50
					Bottom Depth (m):	1.00	0.50	2.00	1.00	2.00	1.00	0.50	3.00	1.00
					Asbestos Lab:		COVENTRY		COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0		[A] < 5.0		[A] < 5.0	[A] < 5.0		[A] < 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0		[A] < 5.0		[A] < 5.0		[A] < 5.0	[A] < 5.0		[A] < 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0		[A] < 10		[A] < 10		[A] < 10	[A] < 10		[A] < 10	
Benzene	M	2760	µg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Toluene	M	2760	µg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Ethylbenzene	M	2760	µg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
m & p-Xylene	M	2760	µg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
o-Xylene	M	2760	µg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		[A] < 1.0		[A] < 1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	
Naphthalene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	< 0.10		< 0.10	
Acenaphthylene	N	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	< 0.10		< 0.10	
Acenaphthene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	< 0.10		< 0.10	
Fluorene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	< 0.10		< 0.10	
Phenanthrene	M	2800	mg/kg	0.10		< 0.10		0.17		0.24	0.76		0.19	
Benzo[j]fluoranthene	N	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.20		< 0.10	
Anthracene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.25		< 0.10	
Fluoranthene	M	2800	mg/kg	0.10		< 0.10		0.31		0.36	1.0		0.29	
Pyrene	M	2800	mg/kg	0.10		< 0.10		0.25		0.26	0.68		0.28	
Benzo[a]anthracene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.36		< 0.10	
Chrysene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.38		< 0.10	
Benzo[b]fluoranthene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.39		< 0.10	
Benzo[k]fluoranthene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.21		< 0.10	
Benzo[a]pyrene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.37		< 0.10	
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.35		< 0.10	
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	< 0.10		< 0.10	

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Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL			**Chemtest Job No.:**		20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1003899	1003900	1003901	1003902	1003903	1003904	1003905	1003906	1003907
Order No.:			Client Sample Ref.:		155463	135455	135457	130493	13094	135450	135467	135471	131867
			Sample Location:		BH1	BH3	BH3	BH4	BH4	BH6	BH9	BH9	TP2
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.00	0.50	2.00	1.00	2.00	1.00	0.50	3.00	0.50
			Bottom Depth (m):		1.00	0.50	2.00	1.00	2.00	1.00	0.50	3.00	1.00
			Asbestos Lab:			COVENTRY		COVENTRY		COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	0.34		< 0.10
Coronene	N	2800	mg/kg	0.10		< 0.10		< 0.10		< 0.10	< 0.10		< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0		< 2.0		< 2.0		< 2.0	5.1		< 2.0
PCB 28	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 52	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 118	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 153	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 138	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 180	U	2815	mg/kg	0.010		[A] < 0.010		[A] < 0.010		[A] < 0.010	[A] < 0.010		[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10		[A] < 0.10		[A] < 0.10		[A] < 0.10	[A] < 0.10		[A] < 0.10
Total Phenols	M	2920	mg/kg	0.30		< 0.30		< 0.30		< 0.30	< 0.30		< 0.30

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL					**Chemtest Job No.:**	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246					**Chemtest Sample ID.:**	1003908	1003909	1003910	1003911	1003912	1003913	1003914	1003915	1003916
Order No.:					Client Sample Ref.:	131864	131871	131872	136853	131890	131883	131878	131879	131892
					Sample Location:	TP4	TP6	TP6	TP8	TP10	TP12	TP14	TP14	TP16
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	2.00	0.50	0.50	0.50	0.50	1.00	1.00
					Bottom Depth (m):	1.00	1.00	2.00	1.00	1.00	1.00	0.50	1.00	1.00
					Asbestos Lab:	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
ACM Type	U	2192		N/A		-	-		-	-	-	-		-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected
ACM Detection Stage	U	2192		N/A		-	-		-	-	-	-		-
Moisture	N	2030	%	0.020		14	13	14	15	13	17	9.6	9.6	9.2
pH (2.5:1)	N	2010		4.0				[A] 8.5					[A] 8.4	
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		< 0.40	< 0.40		< 0.40	< 0.40	< 0.40	< 0.40		< 0.40
Magnesium (Water Soluble)	N	2120	g/l	0.010				< 0.010					< 0.010	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010				< 0.010					0.017	
Total Sulphur	M	2175	%	0.010				[A] 0.020					[A] 0.044	
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Chloride (Water Soluble)	M	2220	g/l	0.010				[A] < 0.010					[A] < 0.010	
Nitrate (Water Soluble)	N	2220	g/l	0.010				< 0.010					< 0.010	
Cyanide (Total)	M	2300	mg/kg	0.50		[A] < 0.50	[A] < 0.50		[A] < 0.50	[A] < 0.50	[A] < 0.50	[A] < 0.50		[A] < 0.50
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		[A] 2.0	[A] 2.2		[A] 1.9	[A] 2.5	[A] 2.0	[A] 4.1		[A] 4.4
Ammonium (Water Soluble)	M	2120	g/l	0.01				0.04					0.18	
Sulphate (Acid Soluble)	M	2430	%	0.010		[A] 0.012	[A] < 0.010	[A] 0.015	[A] 0.017	[A] 0.013	[A] 0.014	[A] 0.030	[A] 0.023	[A] 0.019
Arsenic	M	2450	mg/kg	1.0		34	16		18	16	21	19		19
Barium	M	2450	mg/kg	10		210	130		150	190	140	140		140
Cadmium	M	2450	mg/kg	0.10		1.4	0.82		1.2	0.93	1.1	0.87		1.6
Chromium	M	2450	mg/kg	1.0		32	29		28	29	33	29		25
Molybdenum	M	2450	mg/kg	2.0		5.4	3.2		4.1	3.5	5.4	3.7		3.8
Antimony	N	2450	mg/kg	2.0		2.5	< 2.0		< 2.0	< 2.0	2.6	< 2.0		< 2.0
Copper	M	2450	mg/kg	0.50		37	27		26	29	43	34		41
Mercury	M	2450	mg/kg	0.10		0.17	0.14		0.20	0.15	0.19	0.12		0.10
Nickel	M	2450	mg/kg	0.50		64	51		53	52	57	51		47
Lead	M	2450	mg/kg	0.50		28	24		29	24	29	23		20
Selenium	M	2450	mg/kg	0.20		0.86	0.52		0.81	0.48	1.1	2.2		0.67
Zinc	M	2450	mg/kg	0.50		94	91		140	87	94	71		67
Chromium (Trivalent)	N	2490	mg/kg	1.0		32	29		28	29	33	29		25
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50	< 0.50		< 0.50	< 0.50	< 0.50	< 0.50		< 0.50
Total Organic Carbon	M	2625	%	0.20		[A] 0.55	[A] 0.48		[A] 0.57	[A] 0.72	[A] 0.65	[A] 0.51		[A] 0.31
Mineral Oil	N	2670	mg/kg	10		< 10	< 10		< 10	< 10	< 10	< 10		< 10
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL					**Chemtest Job No.:**	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246					**Chemtest Sample ID.:**	1003908	1003909	1003910	1003911	1003912	1003913	1003914	1003915	1003916
Order No.:					Client Sample Ref.:	131864	131871	131872	136853	131890	131883	131878	131879	131892
					Sample Location:	TP4	TP6	TP6	TP8	TP10	TP12	TP14	TP14	TP16
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.50	2.00	0.50	0.50	0.50	0.50	1.00	1.00
					Bottom Depth (m):	1.00	1.00	2.00	1.00	1.00	1.00	0.50	1.00	1.00
					Asbestos Lab:	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0		[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0		[A] < 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0	[A] < 5.0		[A] < 5.0	[A] < 5.0	[A] < 5.0	[A] < 5.0		[A] < 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10	[A] < 10		[A] < 10	[A] < 10	[A] < 10	[A] < 10		[A] < 10
Benzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Toluene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0	[A] < 1.0	[A] < 1.0	[A] < 1.0		[A] < 1.0
Naphthalene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Phenanthrene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[j]fluoranthene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.21	0.12		0.31	0.21	< 0.10	< 0.10		< 0.10
Pyrene	M	2800	mg/kg	0.10	0.18	0.11		0.27	0.17	< 0.10	< 0.10		< 0.10
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10

Chemtest
The right chemistry to deliver results

Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL			**Chemtest Job No.:**		20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153	20-12153
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1003908	1003909	1003910	1003911	1003912	1003913	1003914	1003915	1003916
Order No.:			Client Sample Ref.:		131864	131871	131872	136853	131890	131883	131878	131879	131892
			Sample Location:		TP4	TP6	TP6	TP8	TP10	TP12	TP14	TP14	TP16
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.50	0.50	2.00	0.50	0.50	0.50	0.50	1.00	1.00
			Bottom Depth (m):		1.00	1.00	2.00	1.00	1.00	1.00	0.50	1.00	1.00
			Asbestos Lab:		COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Coronene	N	2800	mg/kg	0.10	< 0.10	< 0.10		< 0.10	< 0.10	< 0.10	< 0.10		< 0.10
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0	< 2.0		< 2.0	< 2.0	< 2.0	< 2.0		< 2.0
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010		[A] < 0.010
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10	[A] < 0.10		[A] < 0.10	[A] < 0.10	[A] < 0.10	[A] < 0.10		[A] < 0.10
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30		< 0.30	< 0.30	< 0.30	< 0.30		< 0.30

Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL					**Chemtest Job No.:**	20-12153	20-12153	20-12153
Quotation No.: Q19-18246					**Chemtest Sample ID.:**	1003917	1003918	1003919
Order No.:					Client Sample Ref.:	131894	131859	131899
					Sample Location:	TP17	TP17	TP19
					Sample Type:	SOIL	SOIL	SOIL
					Top Depth (m):	0.80	1.50	1.00
					Bottom Depth (m):	0.80	1.50	1.00
					Asbestos Lab:	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A		-		
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected		
ACM Detection Stage	U	2192		N/A		-		
Moisture	N	2030	%	0.020		12	11	17
pH (2.5:1)	N	2010		4.0			[A] 8.6	[A] 7.9
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40		0.40		
Magnesium (Water Soluble)	N	2120	g/l	0.010			< 0.010	< 0.010
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010			< 0.010	< 0.010
Total Sulphur	M	2175	%	0.010			[A] 0.023	[A] 0.014
Sulphur (Elemental)	M	2180	mg/kg	1.0		[A] 1.0		
Chloride (Water Soluble)	M	2220	g/l	0.010			[A] < 0.010	[A] 0.020
Nitrate (Water Soluble)	N	2220	g/l	0.010			< 0.010	< 0.010
Cyanide (Total)	M	2300	mg/kg	0.50		[A] < 0.50		
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50		[A] 4.1		
Ammonium (Water Soluble)	M	2120	g/l	0.01			0.03	0.06
Sulphate (Acid Soluble)	M	2430	%	0.010		[A] 0.034	[A] 0.017	[A] < 0.010
Arsenic	M	2450	mg/kg	1.0		20		
Barium	M	2450	mg/kg	10		120		
Cadmium	M	2450	mg/kg	0.10		0.88		
Chromium	M	2450	mg/kg	1.0		33		
Molybdenum	M	2450	mg/kg	2.0		3.1		
Antimony	N	2450	mg/kg	2.0		< 2.0		
Copper	M	2450	mg/kg	0.50		35		
Mercury	M	2450	mg/kg	0.10		< 0.10		
Nickel	M	2450	mg/kg	0.50		54		
Lead	M	2450	mg/kg	0.50		32		
Selenium	M	2450	mg/kg	0.20		0.47		
Zinc	M	2450	mg/kg	0.50		83		
Chromium (Trivalent)	N	2490	mg/kg	1.0		33		
Chromium (Hexavalent)	N	2490	mg/kg	0.50		< 0.50		
Total Organic Carbon	M	2625	%	0.20		[A] 0.65		
Mineral Oil	N	2670	mg/kg	10		< 10		
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0		[A] < 1.0		
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0		[A] < 1.0		
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0		[A] < 1.0		
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0		[A] < 1.0		

Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL			**Chemtest Job No.:**		20-12153	20-12153	20-12153
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1003917	1003918	1003919
Order No.:			Client Sample Ref.:		131894	131859	131899
			Sample Location:		TP17	TP17	TP19
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.50	1.00
			Bottom Depth (m):		0.80	1.50	1.00
			Asbestos Lab:		COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0		
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	[A] < 1.0		
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0		
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0		
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0		
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	[A] < 1.0		
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	[A] < 1.0		
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	[A] < 5.0		
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	[A] < 10		
Benzene	M	2760	µg/kg	1.0	[A] < 1.0		
Toluene	M	2760	µg/kg	1.0	[A] < 1.0		
Ethylbenzene	M	2760	µg/kg	1.0	[A] < 1.0		
m & p-Xylene	M	2760	µg/kg	1.0	[A] < 1.0		
o-Xylene	M	2760	µg/kg	1.0	[A] < 1.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	[A] < 1.0		
Naphthalene	M	2800	mg/kg	0.10	< 0.10		
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10		
Acenaphthene	M	2800	mg/kg	0.10	< 0.10		
Fluorene	M	2800	mg/kg	0.10	< 0.10		
Phenanthrene	M	2800	mg/kg	0.10	0.27		
Benzo[j]fluoranthene	N	2800	mg/kg	0.10	< 0.10		
Anthracene	M	2800	mg/kg	0.10	0.12		
Fluoranthene	M	2800	mg/kg	0.10	0.43		
Pyrene	M	2800	mg/kg	0.10	0.39		
Benzo[a]anthracene	M	2800	mg/kg	0.10	0.29		
Chrysene	M	2800	mg/kg	0.10	0.26		
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10		
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10		
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10		
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10		
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10		

Results - Soil

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

Client: IGSL			**Chemtest Job No.:**		20-12153	20-12153	20-12153
Quotation No.: Q19-18246			**Chemtest Sample ID.:**		1003917	1003918	1003919
Order No.:			Client Sample Ref.:		131894	131859	131899
			Sample Location:		TP17	TP17	TP19
			Sample Type:		SOIL	SOIL	SOIL
			Top Depth (m):		0.80	1.50	1.00
			Bottom Depth (m):		0.80	1.50	1.00
			Asbestos Lab:		COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10		
Coronene	N	2800	mg/kg	0.10	< 0.10		
Total Of 17 PAH's	N	2800	mg/kg	2.0	< 2.0		
PCB 28	U	2815	mg/kg	0.010	[A] < 0.010		
PCB 52	U	2815	mg/kg	0.010	[A] < 0.010		
PCB 90+101	U	2815	mg/kg	0.010	[A] < 0.010		
PCB 118	U	2815	mg/kg	0.010	[A] < 0.010		
PCB 153	U	2815	mg/kg	0.010	[A] < 0.010		
PCB 138	U	2815	mg/kg	0.010	[A] < 0.010		
PCB 180	U	2815	mg/kg	0.010	[A] < 0.010		
Total PCBs (7 Congeners)	U	2815	mg/kg	0.10	[A] < 0.10		
Total Phenols	M	2920	mg/kg	0.30	< 0.30		

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003900						
Sample Ref:	135455						
Sample ID:							
Sample Location:	BH3						
Top Depth(m):	0.50						
Bottom Depth(m):	0.50						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.65	3	5	6
Loss On Ignition	2610	M	%	3.5	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.038	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0031	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.66	6.6	10	150	500
Sulphate	1220	U	13	130	1000	20000	50000
Total Dissolved Solids	1020	N	31	310	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	27	270	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003902						
Sample Ref:	130493						
Sample ID:							
Sample Location:	BH4						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.44	3	5	6
Loss On Ignition	2610	M	%	3.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.040	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0062	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0066	0.066	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	3.6	36	1000	20000	50000
Total Dissolved Solids	1020	N	63	630	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	5.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003904						
Sample Ref:	135450						
Sample ID:							
Sample Location:	BH6						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.94	3	5	6
Loss On Ignition	2610	M	%	3.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.041	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0075	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0042	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.22	2.2	10	150	500
Sulphate	1220	U	16	160	1000	20000	50000
Total Dissolved Solids	1020	N	53	530	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003905						
Sample Ref:	135467						
Sample ID:							
Sample Location:	BH9						
Top Depth(m):	0.50						
Bottom Depth(m):	0.50						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 1.2	3	5	6
Loss On Ignition	2610	M	%	4.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	5.1	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.027	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0089	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.36	3.6	10	150	500
Sulphate	1220	U	2.5	25	1000	20000	50000
Total Dissolved Solids	1020	N	65	650	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.2	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	19

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003907						
Sample Ref:	131867						
Sample ID:							
Sample Location:	TP2						
Top Depth(m):	0.50						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.46	3	5	6
Loss On Ignition	2610	M	%	3.4	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.024	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0084	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0068	0.068	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.33	3.3	10	150	500
Sulphate	1220	U	1.7	17	1000	20000	50000
Total Dissolved Solids	1020	N	58	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	2.8	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003908						
Sample Ref:	131864						
Sample ID:							
Sample Location:	TP4						
Top Depth(m):	0.50						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.55	3	5	6
Loss On Ignition	2610	M	%	4.4	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.030	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0066	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0046	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	3.8	38	1000	20000	50000
Total Dissolved Solids	1020	N	58	580	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	< 2.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	14

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003909						
Sample Ref:	131871						
Sample ID:							
Sample Location:	TP6						
Top Depth(m):	0.50						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.48	3	5	6
Loss On Ignition	2610	M	%	3.0	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.029	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0076	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0036	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.30	3.0	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	61	610	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	4.5	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003911						
Sample Ref:	136853						
Sample ID:							
Sample Location:	TP8						
Top Depth(m):	0.50						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.57	3	5	6
Loss On Ignition	2610	M	%	3.4	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.025	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0030	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	< 0.0010	< 0.050	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0053	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.28	2.8	10	150	500
Sulphate	1220	U	1.7	17	1000	20000	50000
Total Dissolved Solids	1020	N	36	360	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	8.9	89	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	15

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003912						
Sample Ref:	131890						
Sample ID:							
Sample Location:	TP10						
Top Depth(m):	0.50						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.72	3	5	6
Loss On Ignition	2610	M	%	3.3	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.4	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.039	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0076	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0083	0.083	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.37	3.7	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	59	590	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.3	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003913						
Sample Ref:	131883						
Sample ID:							
Sample Location:	TP12						
Top Depth(m):	0.50						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.65	3	5	6
Loss On Ignition	2610	M	%	4.1	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		7.8	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.022	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	0.0024	< 0.050	0.5	2	25
Barium	1450	U	0.0029	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	0.0015	< 0.050	0.5	10	70
Copper	1450	U	0.0043	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0014	< 0.050	0.5	10	30
Nickel	1450	U	0.0032	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.0073	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	40	400	1000	20000	50000
Total Dissolved Solids	1020	N	41	410	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	50	500	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	17

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003914						
Sample Ref:	131878						
Sample ID:							
Sample Location:	TP14						
Top Depth(m):	0.50						
Bottom Depth(m):	0.50						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.51	3	5	6
Loss On Ignition	2610	M	%	3.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.036	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.037	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.019	0.19	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	0.0037	0.037	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.26	2.6	10	150	500
Sulphate	1220	U	30	300	1000	20000	50000
Total Dissolved Solids	1020	N	72	710	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	6.7	67	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.6

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003916						
Sample Ref:	131892						
Sample ID:							
Sample Location:	TP16						
Top Depth(m):	1.00						
Bottom Depth(m):	1.00						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.31	3	5	6
Loss On Ignition	2610	M	%	2.6	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.075	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.0075	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.0080	0.080	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.23	2.3	10	150	500
Sulphate	1220	U	< 1.0	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	49	490	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.0	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	9.2

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 22473 IDA Business Park Donore Road Drogheda (CSE)

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	20-12153						
Chemtest Sample ID:	1003917						
Sample Ref:	131894						
Sample ID:							
Sample Location:	TP17						
Top Depth(m):	0.80						
Bottom Depth(m):	0.80						
Sampling Date:							
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	[A] 0.65	3	5	6
Loss On Ignition	2610	M	%	3.2	--	--	10
Total BTEX	2760	M	mg/kg	[A] < 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg	[A] < 10	500	--	--
Total (Of 17) PAH's	2800	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.087	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1450	U	< 0.0010	< 0.050	0.5	2	25
Barium	1450	U	0.015	< 0.50	20	100	300
Cadmium	1450	U	< 0.00010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.0010	< 0.050	0.5	10	70
Copper	1450	U	< 0.0010	< 0.050	2	50	100
Mercury	1450	U	< 0.00050	< 0.0050	0.01	0.2	2
Molybdenum	1450	U	0.012	0.12	0.5	10	30
Nickel	1450	U	< 0.0010	< 0.050	0.4	10	40
Lead	1450	U	< 0.0010	< 0.010	0.5	10	50
Antimony	1450	U	< 0.0010	< 0.010	0.06	0.7	5
Selenium	1450	U	< 0.0010	< 0.010	0.1	0.5	7
Zinc	1450	U	< 0.0010	< 0.50	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	0.51	5.1	10	150	500
Sulphate	1220	U	9.4	94	1000	20000	50000
Total Dissolved Solids	1020	N	78	780	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	3.7	< 50	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Chemtest
The right chemistry to deliver results

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1003899	155463		BH1		A	Amber Glass 250ml
1003899	155463		BH1		A	Plastic Tub 500g
1003900	135455		BH3		A	Amber Glass 250ml
1003900	135455		BH3		A	Plastic Tub 500g
1003901	135457		BH3		A	Amber Glass 250ml
1003901	135457		BH3		A	Plastic Tub 500g
1003902	130493		BH4		A	Amber Glass 250ml
1003902	130493		BH4		A	Plastic Tub 500g
1003903	13094		BH4		A	Amber Glass 250ml
1003903	13094		BH4		A	Plastic Tub 500g
1003904	135450		BH6		A	Amber Glass 250ml
1003904	135450		BH6		A	Plastic Tub 500g
1003905	135467		BH9		A	Amber Glass 250ml
1003905	135467		BH9		A	Plastic Tub 500g
1003906	135471		BH9		A	Amber Glass 250ml
1003906	135471		BH9		A	Plastic Tub 500g
1003907	131867		TP2		A	Amber Glass 250ml
1003907	131867		TP2		A	Plastic Tub 500g
1003908	131864		TP4		A	Amber Glass 250ml
1003908	131864		TP4		A	Plastic Tub 500g
1003909	131871		TP6		A	Amber Glass 250ml
1003909	131871		TP6		A	Plastic Tub 500g

Chemtest
The right chemistry to deliver results

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1003910	131872		TP6		A	Amber Glass 250ml
1003910	131872		TP6		A	Plastic Tub 500g
1003911	136853		TP8		A	Amber Glass 250ml
1003911	136853		TP8		A	Plastic Tub 500g
1003912	131890		TP10		A	Amber Glass 250ml
1003912	131890		TP10		A	Plastic Tub 500g
1003913	131883		TP12		A	Amber Glass 250ml
1003913	131883		TP12		A	Plastic Tub 500g
1003914	131878		TP14		A	Amber Glass 250ml
1003914	131878		TP14		A	Plastic Tub 500g
1003915	131879		TP14		A	Amber Glass 250ml
1003915	131879		TP14		A	Plastic Tub 500g
1003916	131892		TP16		A	Amber Glass 250ml
1003916	131892		TP16		A	Plastic Tub 500g
1003917	131894		TP17		A	Amber Glass 250ml
1003917	131894		TP17		A	Plastic Tub 500g
1003918	131859		TP17		A	Amber Glass 250ml
1003918	131859		TP17		A	Plastic Tub 500g
1003919	131899		TP19		A	Amber Glass 250ml
1003919	131899		TP19		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1450	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2180	Sulphur (Elemental) in Soils by HPLC	Sulphur	Dichloromethane extraction / HPLC with UV detection
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememrnt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N–dimethyl-p-phenylenediamine.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID

Test Methods

SOP	Title	Parameters included	Method summary
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 7 Site Plan

TP18
TP19
BH14
TP15
TP17
BH15
BH12
BH13
TP16
TP12
TP14
SA03
TP13
BH10
TP11
BH07
BH08
BH11
SA04
BH09
TP09
TP10
SA02
TP07
BH06
TP06
BH05
BH04
TP05
BH03
TP04
SA01
TP03
BH02
TP01
BH01
TP02
ExpertGPS Basemap: mapbox, OpenStreetMap

ExpertGPS

Table 1

Laboratory Test Results: Leachate sample - Metals, Inorganics, Other

Client: Clifton Scannell Emerson Associates

Location: Cruiserath, Dublin 24

AWN Ref: 16_8877

		Sample ID	TP1	TP6	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH9	BH9	Groundwater Regulations S.I. 9 of 2010	EPA IGVs 2003
		Date sampled	15/03/2016	15/03/2016	16/03/2016	16/03/2016	16/03/2016	16/03/2016	16/03/2016	16/03/2016	21/03/2016	21/03/2016	16/03/2016	21/03/2016	21/03/2016		
		Sample Depth (m)	1.50	1.80	0.50	2.00	0-0.5	1.50	0-0.5	2.50	0-0.5	1.00	1.6-1.8	0.40	1.00		
Parameter	**Units**	**LOD**															
Aluminium	mg/l	<0.02	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	0.15	0.2
Antimony	mg/l	<0.002	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	-
Arsenic	mg/l	<0.0025	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0075	0.01
Barium	mg/l	<0.003	nt	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	0.1
Boron	mg/l	<0.002	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	0.75	1
Cadmium	mg/l	<0.0005	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00375	0.005
Calcium	mg/l	<0.2	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	200
Chromium	mg/l	<0.0015	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0375	0.03
Copper	mg/l	<0.007	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5	0.03
Lead	mg/l	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01875	0.01
Magnesium	mg/l	<0.1	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	50
Mercury	mg/l	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00075	0.001
Molybdenum	mg/l	<0.002	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	-
Nickel	mg/l	<0.002	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	0.02
Potassium	mg/l	<0.1	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	5
Selenium	mg/l	<0.003	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Silicon	mg/l	<0.1	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*		
Sodium	mg/l	<0.1	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	150	150
Titanium	mg/l	<0.005	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	-
Zinc	mg/l	<0.003	-	0.003	0.003	0.003	0.003	-	0.006	0.005	-	0.003	0.006	0.003	0.003		0.1
Chloride*	mg/l	<0.3	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	(24 or 187.5) 1	30
Fluoride	mg/l	<0.3	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	1
Nitrate	mg/l	<0.2	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	37.5	25
Sulphate	mg/l	<0.05	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	187.5	200
Total Alkalinity	mg/l	<1	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*		No abnormal change
Dissolved Organic Carb	mg/l	<2	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	-
Total Dissolved Solids	mg/l	<10	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*		1000
PAH 6 Total	mg/l	<0.000068	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	0.000075	0.0001
PAH 17 Total	mg/l	<0.000295	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*		
EPH (C8-C40)	mg/l	<0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	mg/l	<0.1	nt	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	0.0005
Electrical Conductivity	uS/cm	<2	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	(800 or 1875) [1]	1,000
pH	pH units	<0.01	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	*nt*	-	≥6.5 and ≤9.5

Notes

- = Guideline Not Available

Results are **Bold** and shaded where they exceed the 2010 Regulations

Results are underlined where they exceed the EPA Interim Guideline

EPA Interim Guideline Values (IGVs) 2003

SI No. 9 of 2010 Groundwater Regulations

µg/l = micrograms per litre

mg/l = milligrams per litre

Note 1: Different GW Thresholds apply to different status classification tests

** lower EC Directive value for Cl taken as worst case comparison*

nt = not tested

- Less than the laboratory Limit of Detection (LOD) where shown

Table 2

Laboratory Test Results: Soil-Volatile Organic Compounds (VOC)

Client: Clifton Scannell Emerson Associates

Location: Cruiserath, Dublin 24

AWN Ref: 16_8877

		Sample ID	TP1	TP6	BH4	BH4	BH5	BH5	BH6	BH6	BH7	BH7	BH8	BH9	BH9	Groundwater Regulations S.I. 9 of 2010	EPA IGVs 2003
		Date sampled	15/03/2016	15/03/2016	16/03/2016	16/03/2016	16/03/2016	16/03/2016	16/03/2016	16/03/2016	21/03/2016	21/03/2016	16/03/2016	21/03/2016	21/03/2016		
		Sample Depth (m)	1.50	1.80	0.50	2.00	0-0.5	1.50	0-0.5	2.50	0-0.5	1.00	1.6-1.8	0.40	1.00		
Parameter	**Units**	**LOD**															
VOC MS																	
Dichlorodifluoromethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Methyl Tertiary Butyl Ether	ug/l	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	30
Chloromethane	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
Vinyl Chloride	ug/l	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.375	
Bromomethane	ug/l	<1	-	-	-	-	-	-	-	-	-	-	-	-	-		
Chloroethane	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Trichlorofluoromethane	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,1-Dichloroethene (1,1 DCE)	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dichloromethane (DCM)	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
trans-1-2-Dichloroethene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,1-Dichloroethane	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
cis-1-2-Dichloroethene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
2,2-Dichloropropane	ug/l	<1	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Bromochloromethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Chloroform	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		12
1,1,1-Trichloroethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		500
1,1-Dichloropropene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Carbon tetrachloride	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dichloroethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	2.25	3
Benzene	ug/l	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	-
Trichloroethene (TCE)	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	7.50	10.00
1,2-Dichloropropane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dibromomethane	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Bromodichloromethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
cis-1-3-Dichloropropene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Toluene	ug/l	<5	-	-	-	-	-	-	-	-	-	-	-	-	-		10
trans-1-3-Dichloropropene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		-
1,1,2-Trichloroethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Tetrachloroethene (PCE)	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	10
1,3-Dichloropropane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dibromochloromethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		-
1,2-Dibromoethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		

Chlorobenzene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		1
1,1,1,2-Tetrachloroethane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		-
Ethylbenzene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		10
p/m-Xylene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		10
o-Xylene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Styrene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bromoform	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
Isopropylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,1,2,2-Tetrachloroethane	ug/l	<4	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bromobenzene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,2,3-Trichloropropane	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
Propylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
2-Chlorotoluene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,3,5-Trimethylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-Chlorotoluene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
tert-Butylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,2,4-Trimethylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
sec-Butylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
4-Isopropyltoluene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,3-Dichlorobenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,4-Dichlorobenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
n-Butylbenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		
1,2-Dichlorobenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		10
1,2-Dibromo-3-chloropropane	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		-
1,2,4-Trichlorobenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		0.4
Hexachlorobutadiene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		0.1
Naphthalene	ug/l	<2	-	-	-	-	-	-	-	-	-	-	-	-	-		1
1,2,3-Trichlorobenzene	ug/l	<3	-	-	-	-	-	-	-	-	-	-	-	-	-		-

Notes

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Results are underlined where they exceed the EPA Interim Guideline

EPA Interim Guideline Values (IGVs) 2003
SI No. 9 of 2010 Groundwater Regulations

µg/l = micrograms per litre
mg/l = milligrams per litre

Note 1: Different GW Thresholds apply to different status classification tests
** lower EC Directive value for Cl taken as worst case comparison*

nt = not tested

-	Less than the laboratory Limit of Detection (LOD) where shown

Table 3

Laboratory Test Results: Groundwater Samples - Metals, Inorganics, Other

Client: Clifton Scannell Emerson Associates

Location: Cruiserath, Dublin 24

AWN Ref: 16_8877

		Sample ID	BH6	BH8				Groundwater Regulations S.I. 9 of 2010	EPA IGVs 2003
		Date sampled	22/03/2016	22/03/2016					
		Sample Depth (m)	n/a	n/a					
Parameter	**Units**	**LOD**							
Aluminium	mg/l	<0.02	*nt*	*nt*				0.15	0.2
Antimony	mg/l	<0.002	*nt*	*nt*				-	-
Arsenic	mg/l	<0.0025	-	-				0.0075	0.01
Barium	mg/l	<0.003	*nt*	*nt*				-	0.1
Boron	mg/l	<0.002	*nt*	*nt*				0.75	1
Cadmium	mg/l	<0.0005	-	-				0.00375	0.005
Calcium	mg/l	<0.2	0.1485	0.1554				-	200
Chromium	mg/l	<0.0015	-	-				0.0375	0.03
Copper	mg/l	<0.007	-	-				1.5	0.03
Lead	mg/l	<0.005	-	-				0.01875	0.01
Magnesium	mg/l	<0.1	5.3	5.3				-	50
Mercury	mg/l	<0.001	-	-				0.00075	0.001
Molybdenum	mg/l	<0.002	*nt*	*nt*				-	-
Nickel	mg/l	<0.002	-	-				0.015	0.02
Potassium	mg/l	<0.1	0.0092	0.0165				-	5
Selenium	mg/l	<0.003	-	-				-	-
Silicon	mg/l	<0.1	*nt*	*nt*				-	-
Sodium	mg/l	<0.1	-	-				150	150
Titanium	mg/l	<0.005	*nt*	*nt*				-	-
Zinc	mg/l	<0.003	-	-				-	0.1
Chloride*	mg/l	<0.3	45.3	39.4				(24 or 187.5) [1]	30.00
Fluoride	mg/l	<0.3	*nt*	*nt*				-	1
Nitrate as NO3	mg/l	<0.2	58.8	38				37.5	25
Nitrire as NO2	mg/l	<0.02	0.26	0.54					
Sulphate	mg/l	<0.05	20.8	34.41				187.5	200
Ammoniacal Nitrogen as N	mg/l	<0.03	1.09	1.69					
Total Alkalinity	mg/l	<1	2,166	1,370				-	No abnormal change
Dissolved Organic Carbon	mg/l	<2	*nt*	*nt*				-	-
Total Dissolved Solids	mg/l	<10	*nt*	*nt*				-	1,000
PAH 6 Total	mg/l	<0.000068	*nt*	*nt*				0.000075	0.0001
PAH 17 Total	mg/l	<0.000295	*nt*	*nt*					
EPH (C8-40)	mg/l	<0.01	0.08	<0.01					
Phenol	mg/l	<0.1						-	0.0005
Electrical Conductivity	uS/cm	<2	*nt*	*nt*				(800 or 1875) [1]	1,000
pH	pH units	<0.01	*nt*	*nt*				-	≥6.5 and ≤9.5

Notes

- = Guideline Not Available

Results are **Bold** and shaded where they exceed the 2010 Regulations

Results are underlined where they exceed the EPA Interim Guideline

EPA Interim Guideline Values (IGVs) 2003

SI No. 9 of 2010 Groundwater Regulations

µg/l = micrograms per litre

mg/l = milligrams per litre

Note 1: Different GW Thresholds apply to different status classification tests

** lower EC Directive value for Cl taken as worst case comparison*

nt = not tested

- Less than the laboratory Limit of Detection (LOD) where shown

Table 4

Laboratory Test Results: Groundwater-Volatile Organic Compounds (VOC)

Client: Clifton Scannell Emerson Associates

Location: Cruiserath, Dublin 24

AWN Ref: 16_8877

		Sample ID	BH6	BH8				Groundwater Regulations S.I. 9 of 2010	EPA IGVs 2003
		Date sampled	22/03/2016	22/03/2016					
		Sample Depth (m)	n/a	n/a					
Parameter	**Units**	**LOD**							
VOC MS									
Dichlorodifluoromethane	ug/l	<2	-	-				-	-
Methyl Tertiary Butyl Ether	ug/l	<1	-	-					30
Chloromethane	ug/l	<3	-	-					-
Vinyl Chloride	ug/l	<0.1	-	-				0.375	
Bromomethane	ug/l	<1	-	-				-	
Chloroethane	ug/l	<3	-	-					
Trichlorofluoromethane	ug/l	<3	-	-					
1,1-Dichloroethene (1,1 DCE)	ug/l	<3	-	-					
Dichloromethane (DCM)	ug/l	<3	-	-					
trans-1-2-Dichloroethene	ug/l	<3	-	-					
1,1-Dichloroethane	ug/l	<3	-	-					3
cis-1-2-Dichloroethene	ug/l	<3	-	-					-
2,2-Dichloropropane	ug/l	<1	-	-					
Bromochloromethane	ug/l	<2	-	-					
Chloroform	ug/l	<2	-	-					12
1,1,1-Trichloroethane	ug/l	<2	-	-					500
1,1-Dichloropropene	ug/l	<3	-	-					-
Carbon tetrachloride	ug/l	<2	-	-					
1,2-Dichloroethane	ug/l	<2	-	-				2.25	3
Benzene	ug/l	<1	-	-				0.75	-
Trichloroethene (TCE)	ug/l	<3	-	-				7.50	10.00
1,2-Dichloropropane	ug/l	<2	-	-				-	-
Dibromomethane	ug/l	<3	-	-					
Bromodichloromethane	ug/l	<2	-	-					
cis-1-3-Dichloropropene	ug/l	<2	-	-					
Toluene	ug/l	<5	-	-					10
trans-1-3-Dichloropropene	ug/l	<2	-	-					-
1,1,2-Trichloroethane	ug/l	<2	-	-					

Tetrachloroethene (PCE)	ug/l	<3	-	-				7.5	10
1,3-Dichloropropane	ug/l	<2	-	-					
Dibromochloromethane	ug/l	<2	-	-					-
1,2-Dibromoethane	ug/l	<2	-	-					
Chlorobenzene	ug/l	<2	-	-					1
1,1,1,2-Tetrachloroethane	ug/l	<2	-	-					-
Ethylbenzene	ug/l	<2	-	-					10
p/m-Xylene	ug/l	<3	-	-					10
o-Xylene	ug/l	<2	-	-					
Styrene	ug/l	<2	-	-					
Bromoform	ug/l	<2	-	-					
Isopropylbenzene	ug/l	<3	-	-					
1,1,2,2-Tetrachloroethane	ug/l	<4	-	-					
Bromobenzene	ug/l	<2	-	-					
1,2,3-Trichloropropane	ug/l	<3	-	-					
Propylbenzene	ug/l	<3	-	-					
2-Chlorotoluene	ug/l	<3	-	-					
1,3,5-Trimethylbenzene	ug/l	<3	-	-				-	-
4-Chlorotoluene	ug/l	<3	-	-					
tert-Butylbenzene	ug/l	<3	-	-					
1,2,4-Trimethylbenzene	ug/l	<3	-	-					
sec-Butylbenzene	ug/l	<3	-	-					
4-Isopropyltoluene	ug/l	<3	-	-					
1,3-Dichlorobenzene	ug/l	<3	-	-					
1,4-Dichlorobenzene	ug/l	<3	-	-					
n-Butylbenzene	ug/l	<3	-	-					
1,2-Dichlorobenzene	ug/l	<3	-	-					10
1,2-Dibromo-3-chloropropane	ug/l	<2	-	-					-
1,2,4-Trichlorobenzene	ug/l	<3	-	-					0.4
Hexachlorobutadiene	ug/l	<3	-	-					0.1
Naphthalene	ug/l	<2	-	-					1
1,2,3-Trichlorobenzene	ug/l	<3	-	-					-

Notes

-	= Guideline Not Available

Results are **Bold** and shaded where they exceed the 2010 Regulations

Results are underlined where they exceed the EPA Interim Guideline

EPA Interim Guideline Values (IGVs) 2003
SI No. 9 of 2010 Groundwater Regulations

µg/l = micrograms per litre
mg/l = milligrams per litre

Note 1: Different GW Thresholds apply to different status classification tests
** lower EC Directive value for Cl taken as worst case comparison*

nt = not tested

-	Less than the laboratory Limit of Detection (LOD) where shown

7.0 HYDROLOGY

7.1 INTRODUCTION

This chapter assesses and evaluates the potential impacts of the Proposed Development described in Chapter 2 (Description of the Proposed Development) on the surrounding water and hydrological environment. The impact on land, soils, geology and hydrogeology is addressed in Chapter 6. Chapter 14, Material Assets addresses the impacts on water supply, wastewater and storm water drainage.

7.2 METHODOLOGY

7.2.1 General

The methodology used in this assessment follows current European and Irish guidance as outlined in:

- EPA Draft EIA Report Guidelines 2017
- European Commission *'Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report'* 2017
- National Roads Authority (NRA) '*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes',* by the National Roads Authority (2009).

7.2.2 Criteria for Rating Impacts

In assessing likely potential and predicted impacts, account is taken of both the importance of the attributes and the predicted scale and duration of the likely impacts.

The quality, significance and duration of potential impacts defined in accordance with the criteria provided in the EPA Draft EIA Report Guidelines (2017) for describing effects are summarised in Table 1.2 in Chapter 1. In addition, due significance is also given to the document entitled '*Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes'* by the National Roads Authority (2009) where appropriate. The National Roads Authority (NRA) criteria is summarised in Table 1 Appendix 7.1.

7.2.3 Sources of Information

This assessment was considered in the context of the available baseline information, potential impacts, consultations with statutory bodies and other parties, and other available relevant information. In collating this information, the following sources of information and references were consulted:

- Latest EPA Maps & Envision water quality monitoring data for watercourses in the area (these data can be accessed at https://gis.epa.ie/EPAMaps/ & catchments.ie);
- National River Basin Management Plan 2018-2021;
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW));
- Flood points & Historical Floods – Office of Public Works (OPW) floods website www.floodmaps.ie;

- Relevant Eastern Catchment Flood Risk Assessment and Management (CFRAM) Flood Reports;
- Requirements for the Protection of Fisheries Habitat During Construction and Development Works at River Sites (Eastern Regional Fisheries Board (ERFB);
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters' (Inland Fisheries Ireland, 2016);
- Dublin City Council (2005) Greater Dublin Strategic Drainage Study (GDSDS): Technical Documents of Regional Drainage Policies. Dublin: Dublin City Council;
- Greater Dublin Regional Code of Practice for Drainage Works: Version Draft 6.0 (Wicklow County Council, South Dublin County Council, Meath County Council, Kildare County Council, Fingal County Council, Dún Laoghaire- Rathdown County Council & Dublin City Council);
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001);

Other relevant documentation consulted as part of this assessment included the following:

- Relevant engineering drawings and reports provided by project engineers Clifton Scannell Emerson Associates (CSEA)in relation to the Proposed Development.

7.3 RECEIVING ENVIRONMENT

7.3.1 Existing Environment

The subject site is c. 3.43 hectares in extent and is located at the Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath (refer to Chapter 1 Figure 1.1).

The site of the Proposed Development was previously used for agriculture purposes with no indication from historical mapping that the site had any other use (OSI, 2020). Much of the surrounding land to the east has been developed in the past 10-15 years for industrial and residential use. The M1 motorway is located directly to the west of the proposed site. A data storage development is currently in construction on the lands to the immediate south.

7.3.2 Hydrology (Surface Water)

Regional drainage runs south to north towards the River Boyne which is c. 1 km to the north.

The internal surface drainage of the overall IDA lands comprises a series of remnant drainage ditches. There are no direct hydrological pathways to the River Boyne. The Sheephouse Stream drains land to the northwest and is culverted under the motorway before leading to the River Boyne. There is no connectivity between the site and this stream. The local hydrological environment is shown in Figure 7.1 below.

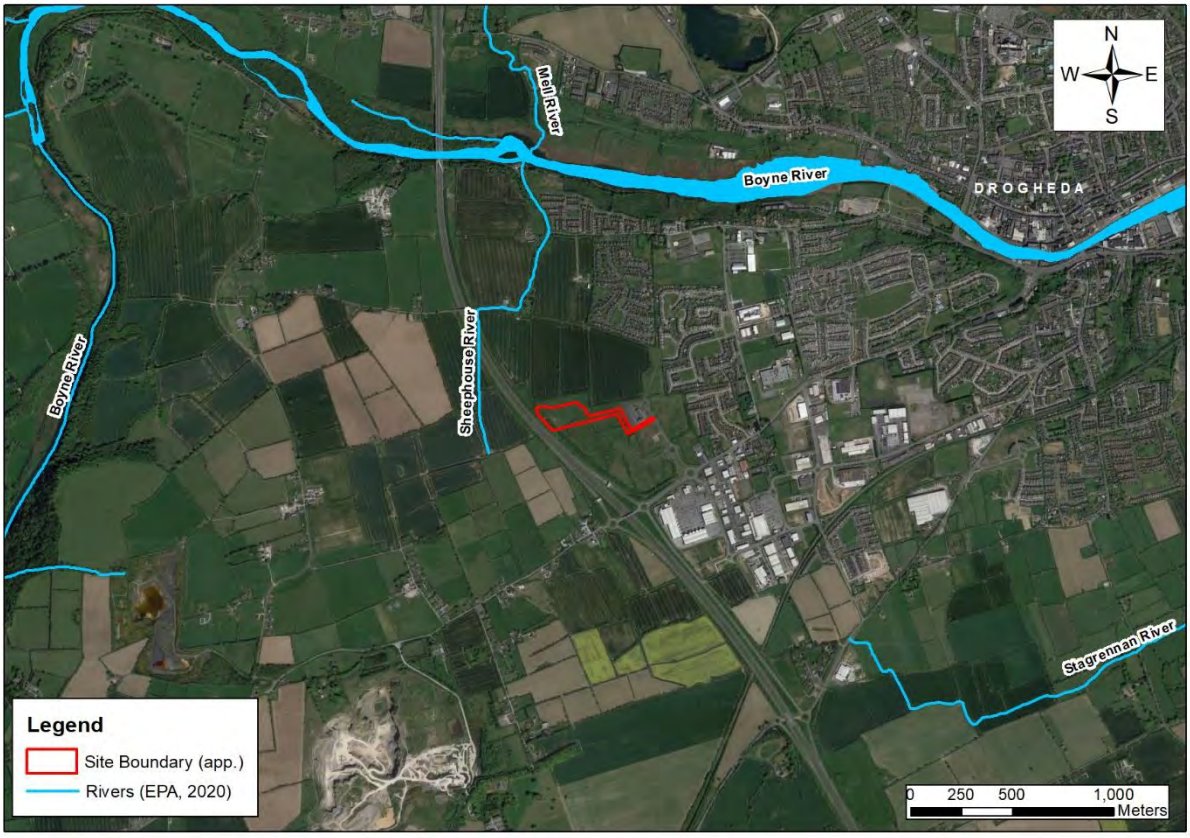

Figure 7.1 Local Hydrological Environment

7.3.2.1 Surface Water Quality

The Proposed Development is located within the former ERBD (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). It is situated in Hydrometric Area No. 07 of the Irish River Network and is located within the Boyne Catchment.

The WFD requires *'Good Water Status'* for all European waters to be achieved through a system of river basin management planning and extensive monitoring by 2015 or, at the least, by 2027. 'Good status' means both *'Good Ecological Status'* and *'Good Chemical Status'*. In 2009 the ERBD River Basin Management Plan (RBMP) 2009-2015 was published. In the ERBD RBMP, the impacts of a range of pressures were assessed including diffuse and point pollution, water abstraction and morphological pressures (e.g. water regulation structures). The purpose of this exercise was to identify water bodies at risk of failing to meet the objectives of the WFD by 2015 and include a programme of measures to address and alleviate these pressures by 2015. This was the first River Basin Management planning cycle (2010-2015). The second cycle river basin management plan for Ireland is currently in place and will run between 2018-2021, with the previous management districts now merged into one Ireland River Basin District (Ireland RBD).

This second-cycle RBMP aims to build on the progress made during the first cycle. Key measures during the first cycle included the licensing of urban waste-water discharges (with an associated investment in urban waste-water treatment) and the implementation of the Nitrates Action Programme (Good Agricultural Practice Regulations). In more general terms, three key lessons have emerged from the first cycle and the public

consultation processes. These lessons have been firmly integrated into the development of the second cycle RBMP. Firstly, the structure of multiple RBDs did not prove effective, either in terms of developing the plans efficiently or in terms of implementing those plans. Secondly, the governance and delivery structures in place for the first cycle were not as effective as expected. Thirdly, the targets set were too ambitious and were not grounded on a sufficiently developed evidence base. The second cycle RBMP has been developed to address these points.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation and regulations. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011).

Figure 7.2 below presents the EPA quality monitoring points in the context of the site and other regional drainage settings.

Figure 7.2 Surface Water Quality Monitoring Point (EPA,2019) (Site location indicated with star)

Surface water quality is monitored periodically by the EPA at various regional locations along principal and other smaller watercourses. With reference to the site setting, the nearest EPA monitoring station is situated along the Upper River Boyne to the west of the site (upstream). The EPA assess the water quality of rivers and streams across Ireland using a biological assessment method, which is regarded as a representative

indicator of the status of such waters and reflects the overall trend in conditions of the watercourse. The biological indicators range from Q5 - Q1. Level Q5 denotes a watercourse with good water quality and high community diversity, whereas Level Q1 denotes very low community diversity and bad water quality. There are two water quality monitoring stations located upstream of the Boyne Estuary, The Old Bridge (RS07B042200) and the New Bridge (RS07M010300). Both obtained a Q4- Good WFD status in 2018 and 2006.

In accordance with the WFD, each river catchment within the former ERBD was assessed by the EPA and a water management plan detailing the programme of measures was put in place for each. Currently, the EPA classifies the Sheephouse Stream waterbody as being under review most likely due to a lack of information being currently available to assign a risk rating. The Boyne Estuary to the north currently has a rating of 1a, '*At risk of not achieving good status'.* Figure 7.3 presents the river waterbody risk EPA map.

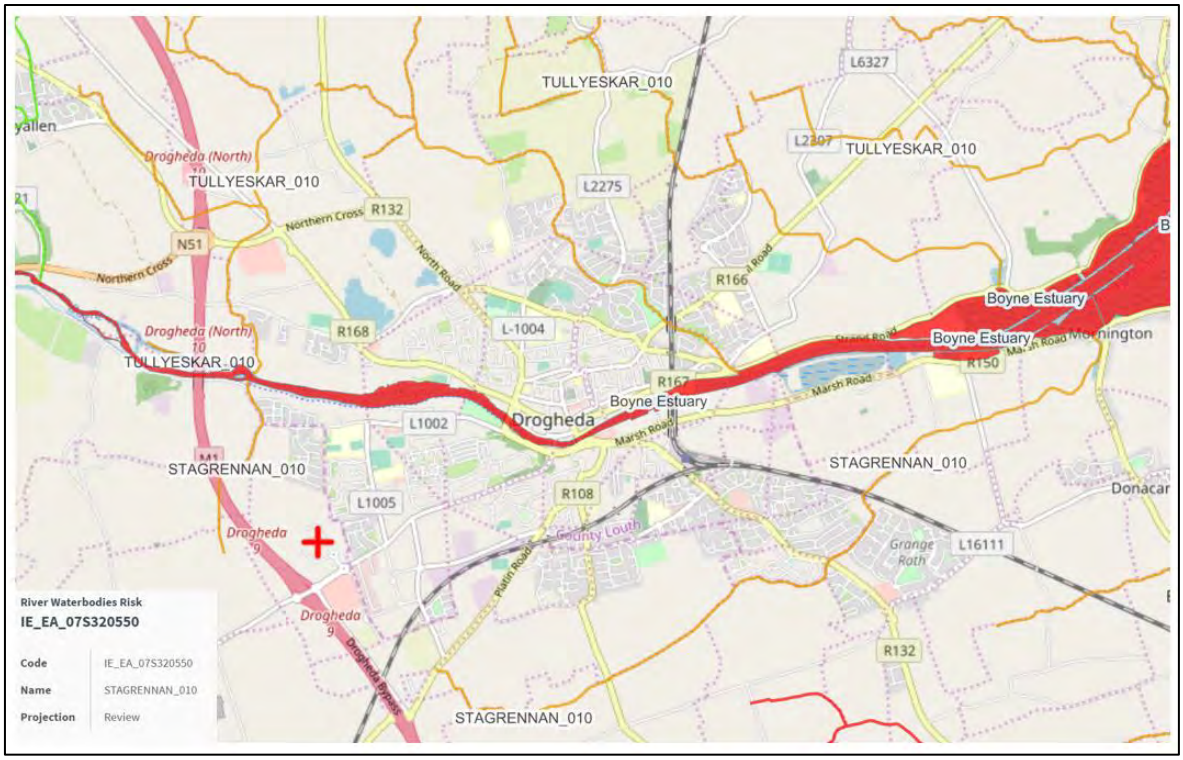

Figure 7.3 River Waterbody Score – The Sheephouse Stream (Stagrennan_01 in the figure above) is currently under review. The Boyne Estuary is listed as 1a 'At risk of not achieving good status, WFD Ecological Status: Poor. (Site location indicated with red cross).

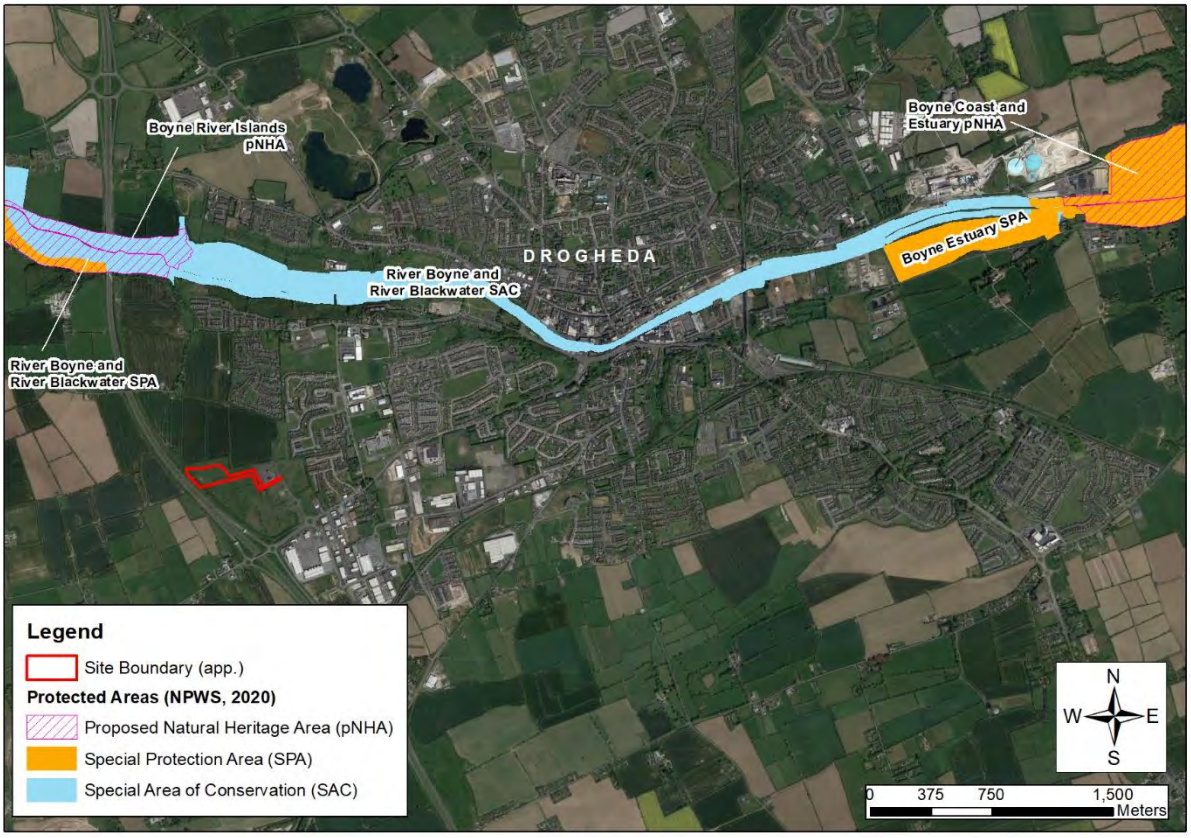

Figure 7.4 Natura Sites (Site location indicated with by red boundary).

7.3.2.2 Flood Risk

The potential risk of flooding on the site was also assessed. A Stage 1 Flood Risk Assessment was completed and is included as Appendix 7.2. The assessment identified no flood hazards for the Proposed Development. The Proposed Development resides within Flood Zone C and is not at risk of flooding from a 1% or 0.1% Annual Exceedance Probability (AEP) event. The flood zonation confirms that the site is suitable for this type of development.

7.3.2.3 Rating of site importance of the hydrological features

Based on the NRA methodology (refer to Appendix 7.1), for rating the importance of hydrological features, the importance of the hydrological features at this site is rated as ***medium importance***.

This is based on the assessment that the attribute has a medium-quality significance or value on a local scale. The Boyne Estuary is the receiving waterbody for the site, it is not a source of local potable water within this stretch of the river, and is an SAC.

7.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development comprises a substation facility (see Chapter 2 for full description of the Proposed Development). The wider landholding is subject to an extant permission (MCC ref: LB/191735) for a data storage facility and this datastorage development includes the drainage (foul and stormwater) infrastructure for the data storage campus and substation development.

The characteristics of the Proposed Development with regard to the hydrological environment, related to both construction and operation activities are described below.

7.4.1 Construction Phase

The key civil engineering works which will have potential impact on the water and hydrological environment during construction of the Proposed Development are summarised below.

(i) Excavations of topsoil and overburden are required for site preparation and levelling, building foundations, installation of underground services, access roads and car parking areas. Due to the depth of overburden recorded onsite it has been confirmed that no bedrock will be removed as part of this Proposed Development.
(ii) Connection to the data storage campus storm and foul sewer infrastructure.
(iii) From available site investigation works carried out in 2020 (IGSL, 2020) there is very little water located within the overburden clays and where present, it is of a discontinuous perched nature. Therefore, extensive dewatering should not be required during excavation works and groundworks. However, localised pumping of the excavations due to collection of rainfall may be required. Provisions for adequate settlement and release of this water will be addressed in the detailed CEMP.
(iv) Construction activities will necessitate storage of cement and concrete materials, temporary oils, and fuels on site. Small localised accidental releases of contaminating substances including hydrocarbons have the potential to occur from construction traffic and vehicles operating on site if not mitigated adequately. Mitigation measures are set out in Section 7.6 below and will be included in the detailed CEMP.

7.4.2 Operational Phase

The key activities which will have a potential impact on the hydrological environment during operation of the Proposed Development are summarised below:

There is a requirement for oil storage for the transformers. The maximum storage is c. 36 m^3 and this will be stored within a bunded area which is greater than 110% of the storage capacity. A float switch will operate to ensure that any collected water is pumped to sewer. There is a 1 m^3 diesel tank required for the backup generator which will be bunded and located within the generator room.

Increased hard standing of c. 6,684m^2, from the original hard standing area of 4,658m^2, will increase surface water run-off rate. The Proposed Development will discharge to the surface water drainage system for the Permitted Development granted a planning permission (as per ref LB/19173) Meath County Council (MCC). Under the same planning permission, surface water drainage service the substation catchment area has been accounted for as part of the overall catchment. The catchment area for the entire Proposed Development will ultimately flow to the permitted attenuation basin located in the eastern side of the permitted site. The proposed attenuation system outfalls via a carrier drain which discharges attenuated flows to the existing drainage network in the IDA Estate Road which discharges to Meath County Council (MCC) network. The discharge from the entire Masterplan catchment will be limited to the allowable greenfield run-off rate of 39.07 litres per second (l/s), as detailed in the *Engineering Planning Report – Drainage and Water* prepared by CSEA and submitted with planning, through

the use of swales, French drains, an attenuation basin and permeable paving in the design of the data storage campus development.

The GIS substation will have minimal requirement for water supply and foul drainage for welfare facilities. Discharge of stormwater and foul sewage is to the datastorage campus storm and foul sewer infrastructure. Water supply will be from the IDA watermain (via a proposed looped watermain onsite). Irish Water (IW) provided a confirmation of feasibility (CoF) for the Permitted Development (including the requirements of the Proposed Development) on 5th November 2019 (IW Reference Number: CDS19007702) and a connection offer has been received by ADSIL (connection reference CDS2000232101 on May 2020 (Appendix 14.1).

7.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

The potential impacts in relation to surface water during the construction and operational phases are outlined below. The assessment of effects are as set out in the EPA Draft EIA Report Guidelines (2017) (refer to Table 1.2 Chapter 1) and the NRA criteria detailed in Appendix 7.1.

7.5.1 Construction Phase

Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. Silty water can arise from excavations, exposed ground, stockpiles, and access roads.

During the construction phase, there is potential for a slight increase in run-off due to the introduction of impermeable surfaces and the compaction of soils. This will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off and sediment loading which could potentially impact local drainage.

As there is no direct pathway to surface water from this site there is no likely potential impact on offsite watercourses.

Excavations will not extend to bedrock and is not expected that temporary dewatering will be required based on the clayey nature of the soil. Some removal of collected rainwater from the excavation may be required where excavations are left open temporarily.

Contamination of Local Water Courses

During the construction phase, there is a risk of accidental pollution incidences from the following sources:

- Spillage or leakage of fuels (and oils) stored on site.
- Spillage or leakage of fuels (and oils) from construction machinery or site vehicles.
- Spillage of oil or fuel from refuelling machinery on site.
- The use of concrete and cement.

Machinery activities on site during the construction phase may result in contamination of runoff/surface water. Potential impacts could arise from accidental spillage of fuels, oils, paints etc. which could impact surface water if allowed to runoff into surface water systems and/or receiving watercourses. However, implementation of the mitigation measures detailed in Section 7.6 will ensure that this does not occur.

Concreting operations carried out near surface water drainage points during construction activities have the potential to lead to discharges to a watercourse. Concrete (specifically, the cement component) is highly alkaline and any spillage to a local watercourse would be detrimental to water quality and local fauna and flora. However, employment of the mitigation measures highlighted in Section 7.6 will ensure that any impact will be mitigated.

As there is no direct pathway to surface water from this site there is no likely potential impact on offsite watercourses.

In relation to construction phase activities the potential impact is ***short-term*** with an ***imperceptible*** and ***neutral*** effect on quality.

7.5.2 Operational Phase

Surface Water

Rainwater runoff from the impermeable areas of the site, roofs and road/car park will be collected in storm water drainage channels and diverted to a large storm water attenuation basin (sized for a 1 in 100-year rainfall event) with a storage volume of 7,549m^3. This is located on the data storage campus site and the design has allowed for the run-off from the Proposed Development. The drainage design for the Permitted Development of the data storage facility also includes permeable paving (under car parking areas), swales and French drain features. These SuDS design features for the Proposed and Permitted Development are detailed in the *Engineering Planning Report – Drainage and Water*, prepared by CSEA .

The drainage design for the Permitted Development also incorporates two hydrocarbon interceptors to ensure the quality of storm water discharge is treated for any hydrocarbon release prior to attenuation. It is proposed to provide a Class 1 full retention separator downstream of the fuel unloading area in accordance with Section 20 of the Greater Dublin Regional Code of Practice. It is proposed to provide a Class 1 bypass interceptor upstream of the surface water attenuation basin to capture the remainder of the roads and car parking areas. In addition to the full retention and bypass separators a hydrodynamic solid separator is provided within the drainage network to screen rubbish, debris and sediment from the surface water runoff before it enters the attenuation basin.

The attenuated storm water for the Proposed, Permitted and indicative Masterplan Developments will be discharged at the allowable greenfield run off rate of 39.07 l/s to the existing IDA storm water system to the east of the data storage campus site. Further detail on the storm water drainage system and the basis of its design is provided in the *Engineering Planning Report – Drainage and Water*, prepared by CSEA, which accompanies this planning application. Chapter 6 Land, Soils, Geology and Hydrogeology address the impacts of storm water drainage discharge to ground.

Wastewater

Foul sewage (peak and average flow) will discharge to the data storage campus infrastructure, which discharges to an existing IDA foul sewer to the east of the data storage campus site via a 225 mm Ø connection. The Irish Water approval connection ((CDS2000232101), (Appendix 14.1) includes the discharge flow calculated from the substation development. The allowance is based on a single toilet and tea -station.

Based on the nature of the Proposed Development there will be no emissions of trade effluent to the foul sewer.

Water Supply
Irish Water have confirmed connection to its water network ((CDS2000232101), Appendix 14.1)

Transformer Fuel and Accidental Spills from car leaks
There is a small potential for leaks and spillages from the transformer fuel tank and to a lesser extent from the diesel tank for the backup generator, both are bunded. The latter is located within the generator building and only has a capacity of 1 m^3. In addition to this there is a potential for leaks and spillages from the small number of vehicles which will access the site. Any accidental emissions of oil, petrol or diesel could cause contamination if the emissions enter the water environment unmitigated.

As there is no direct pathway to surface water from this site there is no likely potential impact on offsite watercourses.

The potential impact from the operation phase of the Proposed Development is ***long-term imperceptible*** *effect* with a ***neutral*** effect on quality.

7.5.3 Do Nothing Scenario

Should the Proposed Development not take place, the site will remain undeveloped and there will be no change to the onsite drainage characteristic, which is not hydraulically linked to any notable surface water feature.

7.6 REMEDIAL AND MITIGATION MEASURES

7.6.1 General

The design of the Proposed Development has taken account of the potential impacts of the Permitted Development and the risks to the water environment specific to the areas where construction is taking place.

There are no watercourses on the site to act as a direct pathway to the Boyne or its tributaries, however, caution will be taken to mitigate the potential effects on the local water environment through the proposed surface water drainage. Mitigation measures are incorporated in the design of the Proposed Development to avoid or minimise potential effects during operation and best practice construction methods adhering to all relevant legislation.

7.6.2 Construction Phase

Construction Environmental Management Plan (CEMP)
An outline Construction Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included with the planning documentation. A detailed CEMP will be prepared and maintained by the appointed contractors during the construction phase of the proposed project. The CEMP will cover all potentially polluting activities and include an emergency response procedure. All personnel working on the site will be trained in the implementation of the CEMP. At a minimum, the CEMP will be formulated in consideration of the standard best international practice including, but not limited, to:

- CIRIA, (2001), *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532)* Construction Industry Research and Information Association;
- CIRIA (2002) *Control of water pollution from construction sites: guidance for consultants and contractors (SPI56)* Construction Industry Research and Information Association;
- CIRIA (2005), *Environmental Good Practice on Site* (C650); Construction Industry Research and Information Association;
- BPGCS005, *Oil Storage Guidelines*;
- CIRIA 697 (2007), *The SuDS Manual*; and
- *UK Pollution Prevention Guidelines,* (PPG) UK Environment Agency, 2004.

Surface Water Run-off

As there are no watercourses (apart from unconnected drainage ditches) present on the site, there will be no direct run-off to surface watercourses during the construction phase.

Run-off water containing silt will be contained on site via settlement tanks and treated to ensure adequate silt removal. Silt reduction measures on site will include a combination of silt fencing, settlement measures (silt traps, silt sacks and settlement tanks/ponds)

Should any discharge of construction water be required during the construction phase, the discharge will be treated using a sediment trap or siltbuster as required.

The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection. This will prevent any potential negative impact on the storm water drainage and the material will be stored away from any surface water drains. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust. Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations. Soil from works will be stored away from existing drainage features to remove any potential impact.

Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site and the suitable distance of topsoil piles from surface water drains will be maintained.

Fuel and Chemical Handling

The following mitigation measures will be taken at the construction stage in order to prevent any spillages of fuels and prevent any resulting impacts to surface water systems;

- Designation of a bunded refuelling areas on the site;
- Provision of spill kit facilities across the site;
- Where mobile fuel bowsers are used the following measures will be taken:
    - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
    - The pump or valve will be fitted with a lock and will be secured when not in use;
    - All bowsers will carry a spill kit and operatives must have spill response training; and
    - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during construction the following measures will be adopted:

- Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded areas;
- Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- All drums to be quality approved and manufactured to a recognised standard;
- If drums are to be moved around the site, they should be done so secured and on spill pallets; and
- Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.

All contractors will be required to implement the CEMP.

All ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil. Wash-down and washout of concrete transporting vehicles will take place at an appropriate facility offsite.

Accidental Releases

Emergency response procedures will be outlined in the detailed CEMP. All personnel working on the site will be suitably trained in the implementation of the procedures.

Soil Removal and Compaction

Export of Material from Site

Suitable topsoil and subsoil will be reused on site as backfill, where possible. However, it is currently envisaged that c. 17,000m^3 will require removal offsite (as advised by the project engineers, CSEA).

The importation of fill materials will be required for construction of foundations and to reinstate the trenches. The project engineers, CSEA, have estimated that the importation of up to 4,800m^3 of fill material will be required.

The surplus excavated material will be removed off-site either as a waste or, where appropriate, as a by-product. Where the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. A formal documented EPA approval will be obtained before re-using the material as a by-product.

If the material is deemed to be a waste, removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with the *Waste Management Act 1996* (as amended), the *Waste Management (Collection Permit) Regulations 2007* (as amended) and the *Waste Management (Facility Permit & Registration) Regulations 2007* (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration (COR), permit or licence is required by the receiving facility.

No stockpiling will be undertaken adjacent to any open drains.

Sources of Fill and Aggregates

All fill and aggregate for the Proposed Development will be sourced from reputable suppliers. All suppliers will be vetted for:

- Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development;
- Environmental Management status; and
- Regulatory and Legal Compliance status of the Company.

It is anticipated that approximately 4800m^3 engineered fill will be required to facilitate construction. There will be no impact to mineral resources in the area as a result of the Proposed Development

7.6.3 Operational Phase

Specific mitigation measures related to surface water and groundwater protection for the operational phase include the following:

Fuel and Chemical Handling
The containment measures planned will minimise the risk of release of solid/ liquid material spillages to the water environment. Containment measures will include storage of transformer fuel and back up diesel generator fuel on site in a bund. The design of the bund will conform to standard bunding specifications - BS EN 1992-3:2006, *Design of Concrete Structures – Part 3: Liquid retaining and containment measures.*

Storm Water & Foul Sewer Drainage
The drainage system design for the substation development and data storage development has incorporated SuDS features throughout. The proposed discharge rates for the Proposed Development and Permitted Development and indictive Masterplan Development have been addressed in the *Engineering Planning Report – Drainage and Water Services* prepared by CSEA which is included with the planning documentation. The allowable discharge rate (QBAR) applicable to the Proposed Development, Permitted and future indicative Masterplan development according to the above report is 39.07 l/s.

The surface water attenuation system for the permitted and indicative Masterplan development will outfall to a surface water pipe to be installed along the eastern boundary of the site which will tie-in to current IDA stormwater sewer via a 225 mm Ø connection.

Foul drainage for the Proposed Development will be in accordance with the relevant standards for design and construction as detailed in the *Engineering Report – Drainage and Water* prepared by CSEA, included within the planning documentation.

Water Supply
No mitigation measures are required in relation to water supply as Irish Water have advised that there is sufficient water supply for the Proposed Development.

The water system will be metered to facilitate detection of leakage and the prevention of water loss. Dual and low flush toilets, water economy outlets and water saving measures will also be implemented where feasible.

7.7 PREDICTED IMPACT OF THE PROPOSED DEVELOPMENT

This section describes the predicted impact of the Proposed Development following the implementation of the remedial and mitigation measures.

7.7.1 Construction Phase

The implementation of mitigation measures highlighted in Section 7.6.2 will ensure that the potential impacts on the surface water environment do not occur during the construction phase and that the predicted impact will be ***short-term-imperceptible-neutral***.

7.7.2 Operational Phase

The implementation of mitigation measures highlighted in Section 7.6.3 will ensure that the potential impacts on the surface water environment do not occur during the operational phase and that the predicted impact will be ***long-term-imperceptible-neutral.***

7.8 RESIDUAL IMPACTS

The residual impacts relate to those impacts that would occur after the mitigation measures, as outlined in Section 7.6 above, have taken effect. In the case of the Proposed Development, there will be no significant residual impacts; the potential impact on surface water during operation (following the EPA Draft EIA Report Guidelines (2017) will be l***ong term, imperceptible*** and ***neutral*** i.e. an impact capable of measurement but without noticeable consequences. Following the NRA criteria for rating the magnitude and significance of impacts on the water and hydrological related attributes, the magnitude of impact is ***negligible.***

7.9 CUMULATIVE IMPACTS

The anticipated cumulative effects of the Proposed Development, Permitted data storage development and the future indicative Masterplan development (all described in Chapter 2) and other known developments listed in Chapter 3 are summarised below.

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts include:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. However, there are no notable surface water features onsite. Internal site drainage consists of a number of disconnected ditches with no direct hydrological pathway to offsite surface water bodies.
- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials unless project-specific CEMPs are put in place for each development and complied with. As stated, there are no notable surface water features onsite and no direct hydrological pathways to offsite surface water bodies

Potential cumulative impacts included in the operational phase include:

- Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the site;

- Increased risk of accidental releases from fuel storage/delivery unless mitigated adequately i.e. bunded tank;
- Increased risk of accidental discharge of hydrocarbons from car parking areas and along roads and unless diverted to surface water system with petrol interceptor; and
- Any additional foul discharges should be treated where appropriate and/or diverted to the foul sewer system and not directly to ground.

Similar mitigation measures to those described in section 7.6 will need to be implemented for all developments to protect water quality.

Increase in wastewater loading and water supply requirement is an impact of all development: Each development will require approval from the IW confirming available capacity in the water and wastewater infrastructure. The surface water and foul drainage infrastructure and water supply requirements for the data storage campus development has been designed to accommodate the future indicative data storage development and the proposed substation development. IW provided a CoF for the development on 5th November 2019 (IW Reference Number: CDS19007702) which confirms that a foul water and water supply connection to IW is available. A connection agreement has since been provided by IW (Appendix 14.1).

The Proposed Development will result in an increase in hard standing which will result in localised reduced recharge to ground and increase in run-off rate. However, each Permitted Development are required by the Local Authority and IW to comply with the Greater Dublin Strategic Drainage Strategy (GDSDS) and Local Authority and IW requirements by providing suitable attenuation on site to ensure greenfield run-off rates and ensure that there is no increase in offsite flooding as a result of the Proposed Development.

There is a potential for contamination of watercourses during construction and operation: Mitigation measures are required to manage sediment run-off and fuel leakages during construction and operation. All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (Local Government (Water Pollution) Act, 1977and 1990 as amended) such that they would be required to manage runoff and fuel leakages.

The residual cumulative impact on water and hydrology for the construction and operation phases is anticipated to be ***long-term***, ***neutral*** in terms of quality and of ***imperceptible*** significance, once appropriate mitigation measures to manage water quality runoff in compliance with legislative requirement are put in place for each development.

Interactions are addressed in Chapter 17 of this EIA Report.

7.10 REFERENCES

- Clifton, Scannell, Emerson Associates (CSEA) (2020) Engineering report
- EPA, (2017). *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (September 2017); Environmental Protection Agency, Co. Wexford, Ireland
- EPA, (2015). Draft *EPA Advice Notes for Preparation of Environmental Impact Statements*; Environmental Protection Agency, Co. Wexford, Ireland
- NRA, (2009). *Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes*; June 2009. National Roads Authority, Dublin.
- Ordinance Survey of Ireland (2019) Geohive online mapping, accessed 1st December 2019

APPENDIX 7.1

CRITERIA FOR RATING SITE ATTRIBUTES – ESTIMATION OF IMPORTANCE OF HYDROLOGY ATTRIBUTES

NATIONAL ROADS AUTHORITY (NRA, 2009)

Table 1 Criteria for rating Site Attributes - Estimation of Importance of Hydrology Attributes (NRA)

Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Quality Class A (Biotic Index Q4, Q5) Flood plain protecting more than 50 residential or commercial properties from flooding Nationally important amenity site for wide range of leisure activities
High	Attribute has a high quality or value on a local scale	Salmon fishery Locally important potable water source supplying >1000 homes Quality Class B (Biotic Index Q3-4) Flood plain protecting between 5 and 50 residential or commercial properties from flooding Locally important amenity site for wide range of leisure activities
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery Local potable water source supplying >50 homes Quality Class C (Biotic Index Q3, Q2- 3) Flood plain protecting between 1 and 5 residential or commercial properties from flooding
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities Local potable water source supplying <50 homes Quality Class D (Biotic Index Q2, Q1) Flood plain protecting 1 residential or commercial property from flooding Amenity site used by small numbers of local people

APPENDIX 7.2

FLOOD RISK ASSESSMENT

PREPARED BY AWN CONSULTING LTD.

awnconsulting

The Tecpro Building,
Clonshaugh Business & Technology Park,
Dublin 17, Ireland.

T: + 353 1 847 4220
F: + 353 1 847 4257
E: info@awnconsulting.com
W: www.awnconsulting.com

APPENDIX 7.2

STAGE 1 FLOOD RISK ASSESSMENT,

SUBSTATION FACILITY, DROGHEDA IDA BUSINESS AND TECHNOLOGY PARK, DONORE ROAD, DROGHEDA, CO. MEATH

Technical Report Prepared By

Paul Conaghan BSc MSc
Teri Hayes Director

Our Reference

PC/19/11184WR01

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Details	Written by	Approved by
Signature		
Name	Paul Conaghan	Teri Hayes
Title	Environmental Consultant	Director
Date	06 November 2020	06 November 2020

EXECUTIVE SUMMARY

AWN Consulting has been appointed to undertake a Flood Risk Assessment (FRA) for a substation facility development on a site at Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath.

This assessment is undertaken in accordance with the guidelines produced by the Department of the Environment, Heritage and Local Government (DoEHLG) - The Planning System and Flood Risk Management Guidelines for Planning Authorities, November 2009, hereafter referred to as the FRM Guidelines.

As per the FRM Guidelines a Flood Risk Assessment (FRA) aims to quantify the risk posed to the development and to the surrounding environment by this development. The main aim of this FRA is to determine the effect the proposed development will have on the floodplain and upstream and downstream flood levels, and any flood mitigation measures necessary.

From reviewing the available data on fluvial and groundwater flooding there is no evidence of flood hazards at the proposed areas of development. OPW flood maps produced as part of the Eastern CFRAM programme and maps produced as part of the Meath and Louth County Development Plans - Strategic Flood Assessment conclusively show that the site is located within Flood Zone C i.e. the probability of flooding is low (less than 0.1% AEP or in 1 in 1000 year). Surface water run-off from the site, following attenuation, will be drained into the existing IDA stormwater system and subsequently indirectly to the Boyne River c. 1 km to the north of the site.

Based on this information the proposed development complies with the appropriate policy guidelines for the area which include the National Development Plan 2018-2027, Meath County Development Plan 2013 – 2019 and the Louth County Development Plan 2015-2021.

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Appendices

Appendix A - Relevant Extracts of Development Plans
Appendix B - Historic Flood Events (Floodmaps.ie)

1.0 INTRODUCTION

AWN has been requested to complete a flood risk assessment (FRA) for a proposed substation facility development

The subject site is located at the IDA Business and Technology Park at Donore Road, which lies to the east of the M1 motorway linking Dublin and Belfast, and on the western extremity of Drogheda. The wider landholding (19.46 ha site) comprises a large primarily green-field site which is served by existing roads infrastructure implemented as part of the setting out of the IDA Business and Technology Park. The wider landholding is subject to an extant permission (MCC ref: LB/191735) for a data storage facility and ancillary development. A Stage 1 flood study was completed for the data storage campus development and concluded that the development was located in Flood Zone C and suitable for development of this type.

The site of the proposed development comprises approximately 3.43 hectares of land which is currently undeveloped with the exception of elements of road infrastructure.

The proposed development will comprise the following;

- A GIS substation which will accommodate 8 bays, including 2 for future development in the area
- 49kVA (underground) electrical supply
- Client control building
- Two dropdown 110kV transmission lines comprising replacement of two existing masts and replacement with two new masts and underground 110kV cables

The topography of the site slopes from east to west (approximately +56 to +48 metres above ordinance datum (mAOD)).

1.1 Scope

A Flood Risk Assessment (FRA) is undertaken over several stages with the need for progression to a more detailed stage dependent on the outcomes of the former stage.

This hierarchy of assessment is necessary to ensure that flood risk is considered at all levels of the planning process and that the appropriate level of detail is also considered, avoiding the need for detailed and costly assessments prior to making strategic decisions.

The assessment has been undertaken in accordance with the guidelines produced by the Department of the Environment, Heritage and Local Government (DoEHLG) - The Planning System and Flood Risk Management Guidelines for Planning Authorities, November 2009[1], hereafter referred to as the FRM Guidelines.

In terms of the Flood Risk Assessment and Management Study the scope of works incorporates three stages:

- ***Stage 1: Flood Risk Identification -*** to identify whether there may be any flooding or surface water management issues related to a plan area or proposed development site that may warrant further investigation.

- ***Stage 2: Initial Flood Risk Assessment -*** to confirm sources of flooding that may affect a plan area or proposed development site, to appraise the adequacy of existing information and to determine what surveys and modelling approach

is appropriate to match the spatial resolution required and complexity of the flood risk issues. The extent of the risk of flooding should be assessed which may involve preparing indicative flood zone maps. Where existing river or coastal models exist, these should be used broadly to assess the extent of the risk of flooding and potential impact of a development on flooding elsewhere and of the scope of possible mitigation measures; and

- ***Stage 3: Detailed Flood Risk Assessment -*** to assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures. This will typically involve use of an existing or construction of a hydraulic model of the river or coastal cell across a wide enough area to appreciate the catchment wide impacts and hydrological processes involved.

As described in the FRM guidelines flood risk is a combination of the likelihood of flooding occurring and the potential consequences which may arise, and is normally expressed in terms of the following relationship:

Flood risk = Probability of flooding x Consequences of flooding

Likelihood of flooding is normally expressed as the percentage probability based on the average frequency measured or extrapolated from records over a large number of years. A 1% probability indicates the flood level that is expected to be reached on average once in 100 years, i.e. it has a 1% chance of occurring in any one year. Therefore:

- 100-year flood = 1% Annual Exceedance Probability (AEP);
- 1000-year flood = 0.1% AEP.

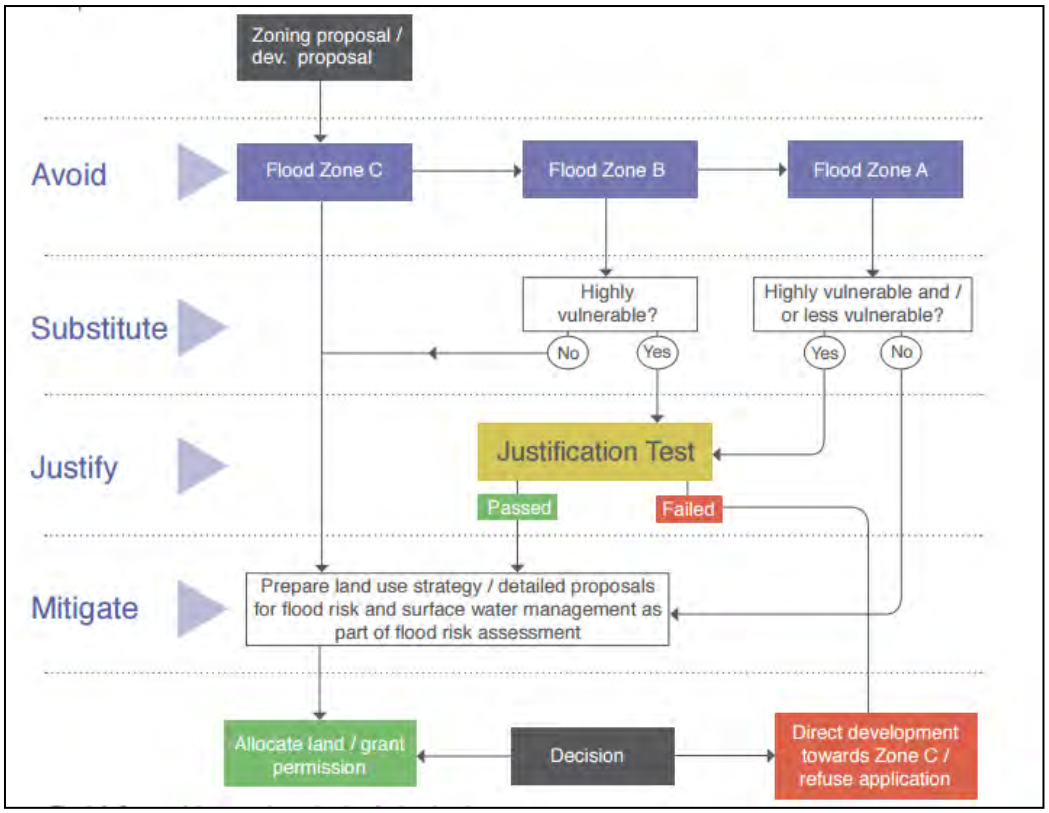
In the FRM Guidelines, the likelihood of a flood occurring is established through the identification of Flood Zones which indicate a high, moderate or low risk of flooding from fluvial or tidal sources, as defined as follows:

- *Flood Zone A* - Where the probability of flooding is highest (greater than 1% AEP or 1 in 100 for river flooding and 0.5% AEP or 1 in 200 for coastal flooding) and where a wide range of receptors would be vulnerable;

- *Flood Zone B* - Where the probability of flooding is moderate (between 0.1% AEP or 1 in 1000 and 1% AEP or 1 in 100 for river flooding and between 0.1% AEP or 1 in 1000 year and 0.5% AEP or 1 in 200 for coastal flooding); and

- *Flood Zone C* - Where the probability of flooding is low (less than 0.1% AEP or 1 in 1000 year for both river and coastal flooding).

Potential impacts of the proposed development were considered within the study area. This is defined as the area within the proposed development site boundary (i.e. the proposed development site); and the wider hydrological setting of the area. A sequential approach was undertaken for this risk assessment under guidance from the local planning authorities (2009). Specifically, a sequential approach is first and foremost directed towards land that is at low risk of flooding. The underpinning philosophy of the sequential approach is highlighted in the illustration below. Based on a review of the OPW Catchment Flood Risk Assessment and Management (CFRAM) maps the proposed development site resides mostly in Flood Zone C. This report contains the first stage of the flood risk assessment



Insert 1 Sequential approach mechanism in the planning process

1.2 Methodology

This assessment follows the FRM Guidelines for a Stage I assessment.; The methodology involves researching the following data sources:

- Base maps – Ordnance Survey of Ireland[2]
- Flood Hazard Maps and flooding information for Ireland, www.floodmaps.ie Office of Public Works (OPW)[3]
- Geological Survey of Ireland (GSI) maps on superficial deposits[4]
- EPA hydrology maps[5]
- National River Basin Management Plan 2018-2021[6]
- The National Development Plan 2018 – 2027[7]
- Louth County Development Plan 2015-2021[10]
- Meath County Development Plan 2019 – 2019[12]
- The Planning System and Flood Risk Management guidelines for the planning authorities[1]
- Strategic Flood Risk Assessment for Louth County Development Plan 2015-2021[11]
- Strategic Flood Risk Assessment for Meath County Development Plan 2013-2019[13]

2.0 DEVELOPMENT PLANS & POLICIES

2.1 National Development Plan 2018 – 2027

See Appendix A for a summary of the flood risk aspects of the National Development Plan 2018 – 2027.

2.2 Meath County Development Plan 2013-2019

See Appendix A for a summary of the flood risk aspects of the Meath County Council Development Plan 2013 - 2019

2.3 Louth County Development Plan 2015-2021

See Appendix A for a summary of the flood risk aspects of the Louth County Council Development Plan 2017 - 2023.

3.0 REGIONAL ENVIRONMENTAL SETTING

3.1 Site Topography and Hydrology

The site is situated on a previously greenfield/ agricultural area which is located to the southwest of Drogheda town and bordered to the west by the M1 motorway. The surrounding environment can be described as a mix of agricultural, commercial and residential settings. The site is situated within a 19.46 ha site and is zoned as 'High Technology' Uses. There are no surface water features on or bounding the site. The internal surface drainage comprises a series of remnant drainage ditches. There are no direct hydrological pathways to the River Boyne. The Sheephouse Stream drains land to the northwest and is culverted under the motorway before leading to the River Boyne. There is no hydrological connectivity between the site and this stream.

Figure 3.1 below presents the location of the proposed development site in the regional hydrological context.

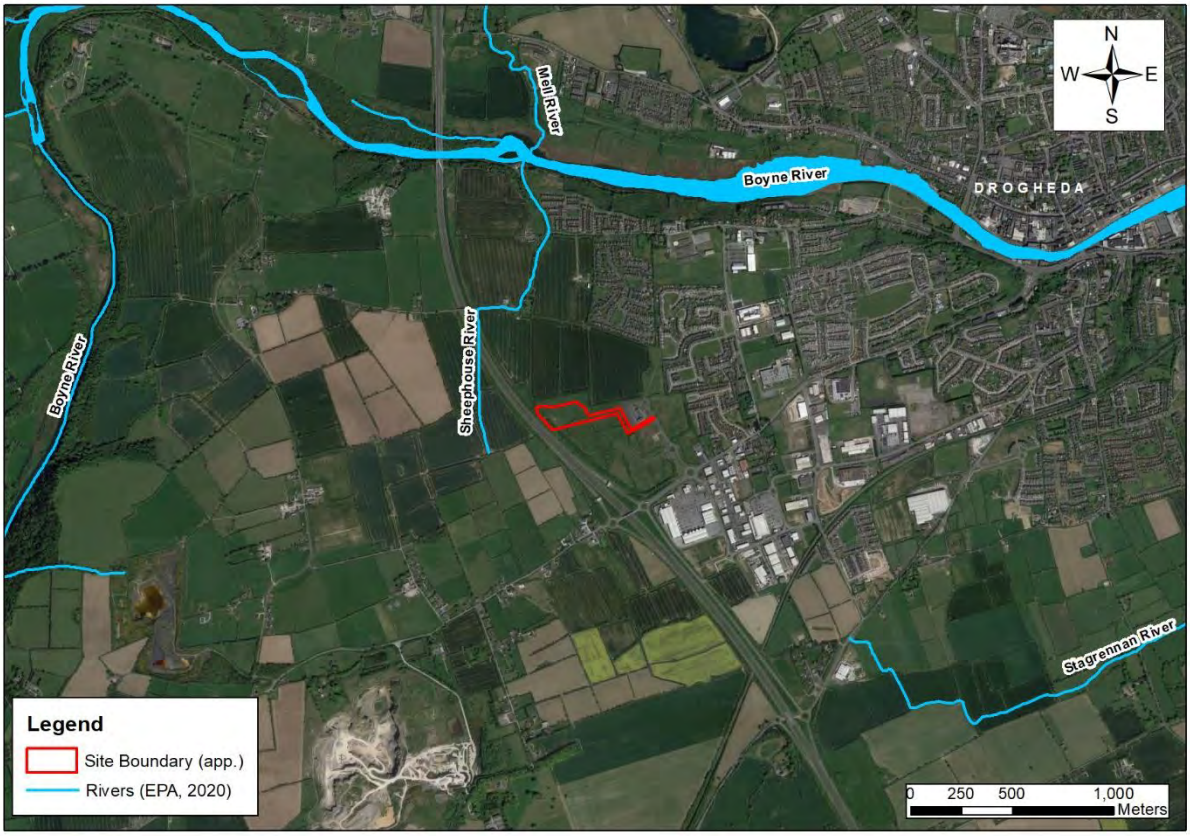


Figure 3.1 Regional Hydrological Environment

The Proposed Development is located within the former ERBD (now the Irish River Basin District) in Hydrometric Area No. 07 of the Irish River Network. It is within the Boyne Catchment catchment and is c. 1 km south of the upper Boyne Estuary transitional waterbody. This nearest section of the Boyne is also listed as a part of the River Boyne and River Blackwater SAC (Site Code 002299). The Regional Area is drained by The Boyne which rises in the north midlands and exits to the sea at Mornington, Co. Meath. The river flows through the towns of Kells, Trim, Navan, Slane and finally Drogheda where international commercial shipping traffic uses the river to service Drogheda Port and third-party facilities.

3.2 Regional Bedrock Geology

Inspection of the available GSI (2019) records (Data Sheet No. 16 and on-line mapping) shows that the bedrock geology at the site and the surrounding area is dominated by rocks from the Late Arundian-Asbian age. The site is located over Dinantian Carboniferous Limestone while the specific rock unit is the Platin Formation (Rock Unit code: CDPLTN) which is described as Crinoidal peloidal grainstone-packstone.

No bedrock outcrops have been identified within this region.

In terms of the structural relationship of the area, the GSI database shows some fault lines to the south and east of the subject site.

3.3 Soil and Subsoil

Teagasc online soil mapping categorises the shallow soil at the proposed site as AminPD – Poorly drained mineral material which is mostly acidic in makeup. The Quaternary geological period extends from about 1.5 million years ago to the present day and can be sub-divided into the Pleistocene Epoch, which covers the Ice Age period and which extended up to 10,000 years ago, and the Holocene Epoch, which extends from that time to the present day.

The GSI/ Teagasc subsoil mapping database of the subsoils in the area of the subject site indicates two principal soil types, as shown in Figure 3.2 below. These comprise the following:

- Sandstone and shale till (Lower Paleozoic) (TLPSsS): This is the predominant soil type located in the study area. It is a clayey till type (diamictons).
- Shales and sandstones till (Namurian) (TNSSs). There is an area located in southwest of the study identified as TNSSs.

Made Ground (Made) is also present to the east of the proposed site, which reflects the urban land use in the wider area. There is no available data on the site-specific ground conditions at the site with regard to superficial geology. There is no indication of alluvium onsite which would suggest previous flooding events.

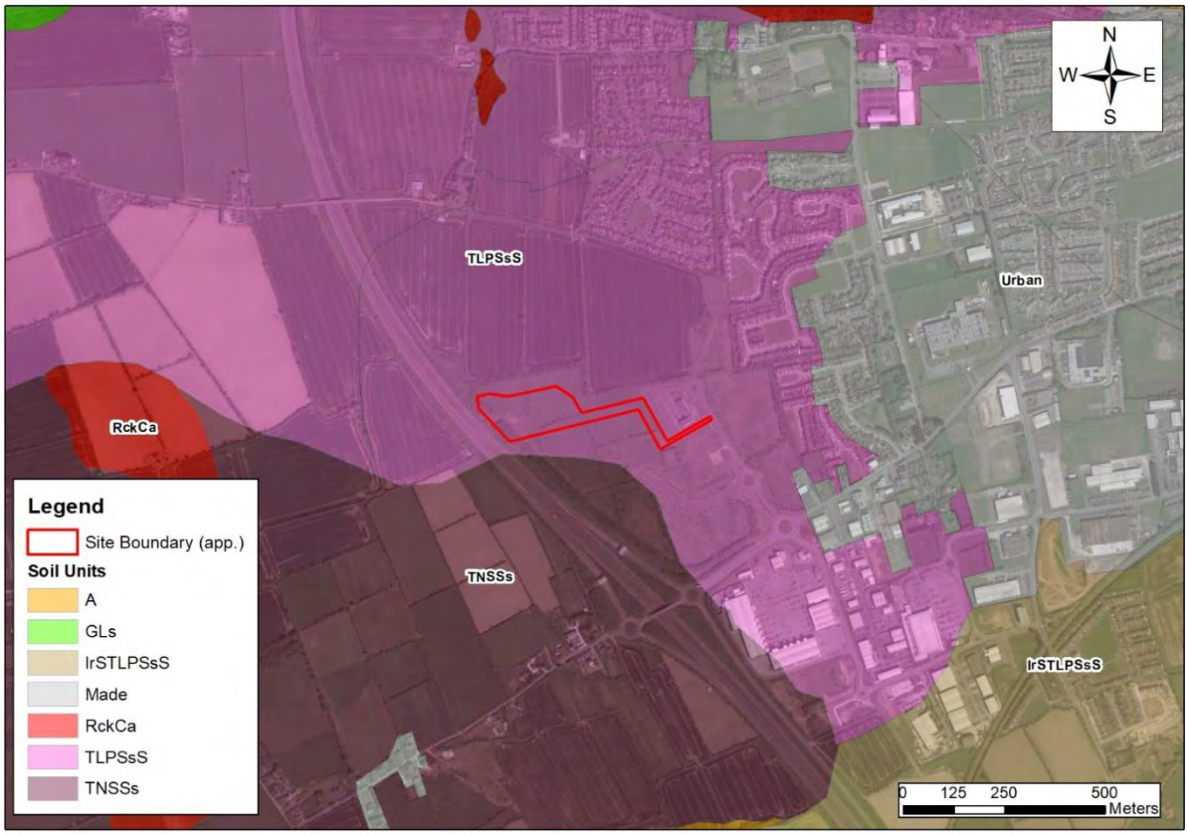


Figure 3.2 Subsoils Map (site location shown in red)

3.4 Existing Drainage

There is no established hydrological linkage off site surface water courses. All local drainage appears to flow north, directed towards the River Boyne (see Figure 3.1 above).

3.5 Proposed Drainage

All Sustainable Drainage Systems (SuDS) features will be designed, constructed and tested in accordance with the Greater Dublin Drainage Strategic Study, Greater Dublin Regional Code of Practice for Drainage Works v6 and the CIRIA SuDS Manual V6. The proposed surface water network service to the substation collects runoff from roofs, roads, and other hard standing areas in a sealed system of pipes and gullies prior to joining the stormwater drainage infrastructure of the permitted development. The surface water drainage system service to the adjacent main road has been granted under planning permission ref LB/191735 Meath County Council (MCC)).

Under the same planning permission, surface water drainage service the substation catchment area has been accounted for as part of the overall catchment. The entire Dub62 catchment area will ultimately flow to the permitted attenuation basin located in the eastern side of the site. The proposed attenuation system outfalls via a carrier drain which discharges attenuated flows to the existing drainage network in the IDA Estate Road which discharges to Meath County Council (MCC) network

Surface Water Attenuation

Rainwater runoff from the impermeable areas of the site, roofs and road/car park will be collected in storm water drainage channels and diverted to a large storm water attenuation basin (sized for a 1 in 100-year rainfall event) with a storage volume of 7,549m^3. The drainage design also includes permeable paving (under car parking areas), swales and French drain features. These SuDS design features are detailed in the *Engineering Planning Report – Drainage and Water*, prepared by CSEA and submitted with planning.

The attenuated storm water for the Proposed Development, Permitted Development and Masterplan will be discharged at the allowable greenfield run off rate of 39.07 l/s to the existing IDA storm water system to the east of the site. Further detail on the storm water drainage system and the basis of its design is provided in the *Engineering Planning Report – Drainage and Water*, prepared by CSEA, which accompanies this planning application.

It is proposed to provide separate pipe networks for roof water drainage and road/car park drainage which both discharge to the surface water attenuation basin. The separation of roof drainage from the road/car park drainage within the development site allows for the option of potentially providing rainwater harvesting in future.

The onsite drainage also incorporates two hydrocarbon interceptors to ensure the quality of storm water discharge is treated for any hydrocarbon release prior to attenuation. It is proposed to provide a Class 1 full retention separators downstream of the fuel unloading area in accordance with Section 20 of the Greater Dublin Regional Code of Practice. It is proposed to provide a Class 1 bypass interceptor upstream of the surface water attenuation basin to capture the remainder of the roads and car parking areas. Roof drainage will not discharge to the bypass separator as it is conveyed by means of a separate pipe network which connects to the road drainage network downstream of the bypass interceptor. In addition to the full retention and bypass separators a hydrodynamic solid separator is provided within the drainage network to screen rubbish, debris and sediment from the surface water runoff before it enters the attenuation basin.

The proposed surface water attenuation system will outfall to a surface water pipe to be installed along the eastern boundary of the site which ties-in to current IDA stormwater sever via a 300 mm Ø connection.

4.0 REGIONAL HYDROGEOLOGY

4.1 Aquifer Classification

The Geological Survey of Ireland has devised a system for classifying the aquifers in Ireland. There are three main classifications: regionally important, locally important and poor aquifers.

The GSI (2019) currently classifies this bedrock aquifer underlying the proposed site as Rkd-Regionally Important Aquifer which is described as karstified (diffuse). RKd aquifers are those in which flow is more diffuse, storage is higher, there are many high yielding wells, and development of bored wells is less difficult. These areas also have caves and large springs, but the springs have a more regular flow. Figure 4.1 below presents the current bedrock aquifer map for the site and surrounding area.

Figure 4.1 Aquifer Bedrock Map

4.2 Aquifer Vulnerability

The vulnerability of a bedrock aquifer is determined by the nature and thickness of the overburden material overlying it. The classification guidelines, as published by the GSI, are given in Table 4.1 below. This shows that the less permeable and thicker the overburden overlying an aquifer is, the lower the vulnerability of the aquifer to contamination.

Table 4.1 GSI Vulnerability Mapping Guidelines

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Karst Features
	High permeability (sand/gravel)	Moderate permeability (e.g. Sandy subsoil)	Low permeability (e.g. Clayey subsoil, clay, peat)	(Sand/gravel aquifers only)	(<30 m radius)
Extreme (E)	0 - 3.0m	0 - 3.0m	0 - 3.0m	0 - 3.0m	-
High (H)	>3.0m	3.0 - 10.0m	3.0 - 5.0m	>3.0m	N/A
Moderate (M)	N/A	>10.0m	5.0 - 10.0m	N/A	N/A
Low (L)	N/A	N/A	>10.0m	N/A	N/A

Notes: (1) N/A = not applicable.
(2) Precise permeability values cannot be given at present.
(3) Release point of contaminants is assumed to be 1-2 m below ground surface.

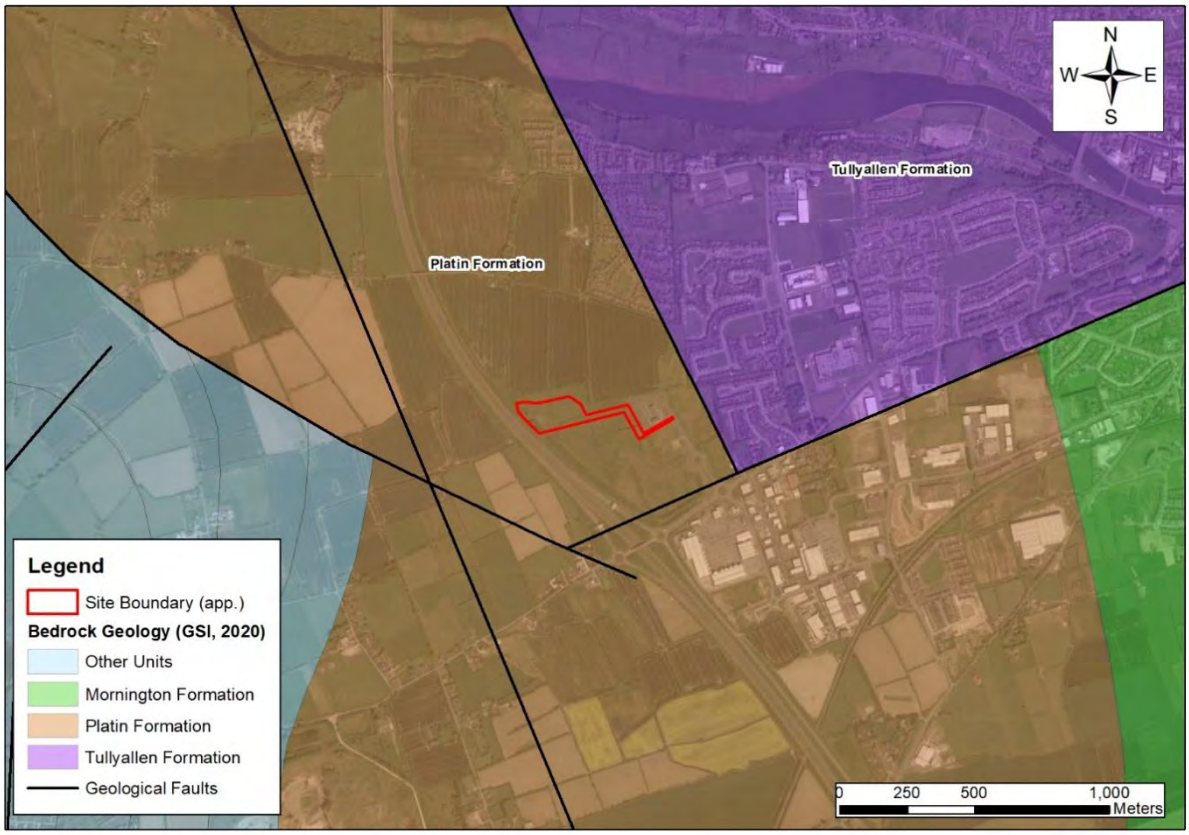


Figure 4.2 Aquifer Bedrock Map

The GSI currently classifies the aquifer vulnerability in the region of the proposed development as 'Low' (L) which indicates an overburden depth of >10 m (see Figure 4.2 & Table 4.1). A review of borehole logs from a 2000 geotechnical investigation (CSEA, 2019) show that overburden was to a maximum depth of 12.60 mbgl, bedrock head was not proved. This would confirm the vulnerability as "Low".

5.0 FLOOD RISK ASSESSMENT

5.1 Existing Flood Records

From reviewing floodmaps.ie there was no evidence of flooding within the site area or in close proximity which indicates there is no risk of flooding. The national flood hazard mapping website (www.floodmaps.ie) indicates a history of flooding in several locations within the broader study area.

These flood locations are highlighted in Appendix B OPW Flood Maps Report and detailed in Table 5.1 below.

Table 5.1 OPW Flood Locations

Flood Location	Year(s) of Flood	Cause of Flooding
Drogheda	Recurring	Costal/Estuarine related to high tide affecting areas to the west of Drogheda town
R152 South of Drogheda Bridge	Recurring	Fluvial flooding.

5.2 Fluvial Flooding

CFRAM Maps

The EU Floods Directive (2007/60/EC) required Member States to undertake a national preliminary flood risk assessment by 2011 to identify areas where significant flood risk exists or might be considered likely to occur. Members States were also required to prepare catchment-based Flood Risk Management Plans by 2015 that will set out flood risk management objectives, actions and measures. The OPW in co-operation with various Local Authorities produced a number of CFRAM maps which aimed to map out current and possible future flood risk areas and develop risk assessment plans. These have been used to form the draft and finalised Flood Risk Management Plans aimed at identifying possible structural and non-structural measures to improve the flood risk. These maps have been used in this assessment.

The CFRAM flood maps do not indicate flooding at the site or around the proposed development site based on the "Present Day" scenario as referred to as the Current Scenario in the Maps and Plans. The Present-Day maps were generated using methodologies based on historic flood data, without taking account of potential changes due to climate change (see Figure 5.1).

Figure 5.1 OPW current fluvial CFRAM Map. Site located at red X (OPW, 2019)

The Mid-Range Future Scenario extents where also generated taking in in the potential effects of climate change using an increase in rainfall of 20% and sea level rise of 500 mm (20 inches). Figure 5.2 indicates there is no risk to the site in this scenario.

Figure 5.2 CFRAM Fluvial mid-range future scenario flood map. Site located at red X (OPW, 2019)

From reviewing Figures 5.1 & 5.2 it is shown that the area is located within Flood Zone C i.e. the probability of flooding is low (less than 0.1% AEP or in 1 in 1000 year). This is also true in a mid-range future scenario based on modelled climate change parameters. As the development is to be used for commercial and industrial use it can be categorised as a "less vulnerable development". As it resides within Flood Zone C a justification test is not required.

5.4 Pluvial Flooding

Pluvial flooding is usually caused by intense rainfall that may only last a few hours. The resulting water follows natural valley lines, creating flow paths along roads and through and around developments and ponding in low spots, which often coincide with fluvial floodplains in low lying areas. Any areas at risk from fluvial flooding will almost certainly be at risk from pluvial flooding.

Current CFRAM Final Pluvial Flood Maps for the catchment are not available. There have been no recorded historical flood events at the site. The area surrounding the

proposed site is also not listed as one of the areas at risk from indicative pluvial flooding included in Louth County Development Plan 2015-2021 Appendix 13 Strategic Flood Risk Assessment Meath County Development Plan 2013 – 2019 Appendix 6 Strategic Flood Risk Assessment. The proposed substation facility's surface water drainage system will be designed, constructed and tested in accordance with the Greater Dublin Drainage Strategic Study, Greater Dublin Regional Code of Practice for Drainage Works v6 and the CIRIA SuDS Manual V6 mitigating any risk from pluvial flooding.

5.5 Coastal Flooding

A review of the online CFRAM maps (OPW, 2019) there is no indication that the site will be at risk from flooding either from a current or midrange future costal flooding scenario. Based on the estuarine conditions of the River Boyne in the wider study area and the proximity to the coast flood maps for costal flooding are similar to those seen in Figures 5.1 and 5.2.

5.6 Groundwater Levels

Based on a GSI search there is no historical or current evidence of groundwater inundation for the site. A GSI search did not located any groundwater wells on or in close proximity to the site.

The area in the vicinity of the site is generally serviced by public mains. There are no public water supplies sourced from groundwater in the area and there are no groundwater Source Protection Zones in the vicinity of the site.

5.7 Overview of Flood Risk Identification

Historic flood maps were reviewed for the study area and do not indicate a history of flooding of the site from local watercourses. The CFRAM maps and those of the Meath and Louth County Development Plans SFRA do not indicate any fluvial flooding (1% AEP or 0.1% AEP) on or in proximity to the site which would suggest a risk of flooding including in a midrange future scenario. The site is therefore classified as being located within designated Flood Zone C i.e. where the probability of flooding is low (less than 0.1% AEP or 1 in 1000 for both river and coastal flooding).

6.0 CONCLUSION

This report sets out the flood risk assessment of the application, in accordance with the FRM guidelines. The assessment is based on the best data available in the public domain at the time of writing.

A Flood Risk Assessment is undertaken over several stages with the need for progression to a more detailed stage dependent on the outcomes of the former stage. The sequential approach, as outlined in the FRM guidelines, was undertaken.

A Stage 1 assessment has been undertaken and as the proposed development is commercial in nature and the landholding has no historical flood hazard, no further justification test is required at the site.

In accordance with The Planning System and Flood Risk Management Guidelines for Planning Authorities, the development resides in Flood Zone C and is a suitable development for this area. The site drainage will be designed constructed and tested in accordance with the Greater Dublin Drainage Strategic Study, Greater Dublin Regional Code of Practice for Drainage Works v6 and the CIRIA SuDS Manual V6.

Based on this information the proposed development complies with the appropriate policy guidelines for the area which include objectives of the National Development Plan 2018-2027, Meath County Development Plan 2013 – 2019 and the Louth County Development Plan 2015-2021 as outlined in Appendix A.

7.0 REFERENCES

1. The Planning System and Flood Risk Management Guidelines for Planning Authorities, November 2009
2. Base maps – Ordnance Survey of Ireland
3. Flood Hazard Maps and flooding information for Ireland, www.floodinfo.ie Office of Public Works (OPW) 2019
4. GSI, Online mapping, www.gsi.ie
5. EPA, Hydrology Data, www.eps.ie
6. National River Basin Management Plan 2018-2021
7. The National Development Plan 2018-2021
8. Gdcl Consulting Engineers, (2018). *Engineering Planning Submission– Engineering Services Report.*
9. Eastern CFRAMS (Catchment Flood Risk Assessment & Management Study) - Draft Flood Risk and Management Plan, http://maps.opw.ie/floodplans
10. Louth County Development Plan 2015-2021
11. Strategic Flood Risk Assessment for Louth County Development Plan 2015-2021[11]
12. Department Public Expenditure & Reform, The National Development Plan 2018-2027.
13. Strategic Flood Risk Assessment County Meath Development Plan 2013 - 2019

APPENDIX A

RELEVANT EXTRACTS FROM DEVELOPMENT PLANS

National Development Plan 2018 - 2027

The Government of Ireland is committed to the policy objective of delivering further capital works/flood relief schemes to minimise the impacts of river and coastal flooding on society through the roll-out of the 29 Flood Risk Management Plans. Delivery of this capital works programme will be underpinned by a total investment of up to €940 million over the lifetime of the National Development Plan. The 29 plans include proposed flood relief schemes which will need to be prioritised. The prioritisation process, which relates primarily to the proposed physical flood-protection measures, will be based on an evaluation process including Multi-Criteria Analysis and benefit to cost-ratio (which represents the overall benefits, on balance across each of the objectives, per Euro cost of a proposed measure), and the risk arising from the nature of the local flood waters within a community. The prioritisation will be applied on a regional basis. The schemes will range from very large schemes costing in excess of €15 million each to smaller schemes that can be progressed by the Local Authorities with funding available from the OPW. An example of five large schemes identified in the plans are as follows:

- Limerick city and environs
- Tralee
- Dundalk
- Carlingford and Greenore
- Drogheda

As part of the National Planning Framework – Ireland 2040 a Strategic Flood Risk Assessment Report has been developed. The objectives of the plan are as follows;

- Avoid inappropriate development in areas at risk of flooding;
- Avoid new developments increasing flood risk elsewhere, including that which may arise from surface water run-off;
- Ensure effective management of residual risks for development permitted in floodplains;
- Avoid unnecessary restriction of national, regional or local economic and social growth;
- Improve the understanding of flood risk among relevant stakeholders; and
- Ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management.

The Guidelines recommend that Flood Risk Assessments (FRA) be carried out to identify the risk of flooding to land, property and people. FRAs should be carried out at different scales by government organisations, local authorities and for proposed developments appropriate to the level of information required to implement the core objectives of the Guidelines. The FRA scales are:

- National Flood Risk Appraisal (NFRA) – There is no specific guidance in the Guidelines for a NFRA, however it must ensure the Guidelines are applied to policies, strategies and objectives and that flood risk is addressed in a national context
- Regional Flood Risk Appraisal (RFRA) – a broad overview of flood risk issues across a region to influence spatial allocations for growth in housing and employment as well as to identify where flood risk management measures may be required at a regional level to support the proposed growth. This should be based on readily derivable information (in particular the CFRAM Studies) and undertaken to inform the Regional Spatial and Economic Strategies.
- Strategic Flood Risk Assessment (SFRA) – an assessment of all types of flood risk informing land use planning decisions. This will enable the Planning Authority to allocate appropriate sites for development, whilst identifying opportunities for reducing flood risk. The SFRA will revisit and develop the flood risk identification undertaken in the RFRA and give consideration to a range of potential sources of flooding. An initial flood risk assessment, based on the identification of Flood Zones, will also be carried out for those areas, which will be zoned for development. Where the initial flood risk assessment highlights the potential for a significant level of flood risk, or there is conflict with the proposed vulnerability of Strategic Flood Risk Assessment – Ireland 2040: The National Planning Framework MDR1273Rp0005F02 5 development, then a site specific FRA will be recommended, which will necessitate a detailed flood risk assessment.
- Site Specific Flood Risk Assessment (FRA) – site or project specific flood risk assessment to consider all types of flood risk associated with the site and propose appropriate site management

and mitigation measures to reduce flood risk to and from the site to an acceptable level. If the previous tiers of study have been undertaken to appropriate levels of detail, it is highly likely that the site-specific FRA will require, detailed channel and site survey, and hydraulic modelling. fence, Waterford. Source: OPW

Meath County Development Plan 2013-2019

7.15 Flood Risk Management

Flooding is a natural phenomenon of the hydrological cycle. While there are different types and causes of flooding, the most common in County Meath are the flooding of rivers (and the Boyne Estuary and its tributaries in the case of East Meath) and the inadequacy of existing stormwater Chapter 7 - Water, Drainage and Environmental Services Meath County Development Plan 2013-2019 142 pipe networks in response to extreme rainfall events. There are many factors that influence flood behaviour and the degrees of risk that it possesses. Like other natural processes, flooding cannot be completely eliminated, but its impacts can be minimised with proactive and environmentally sustainable management.

The Office of Public Works (OPW) is lead agency for flood risk management in Ireland and is responsible for overall implementation of the Floods Directive. The 'Planning System and Flood Risk Management – Guidelines for Planning Authorities' was published in 2009. The guidelines aim to ensure a rigorous assessment of flood risk at all levels to provide a consistency of approach throughout Ireland. Development at all levels will be required to comply with the recommendations of these guidelines. In achieving the aims and objectives of the Guidelines, Meath County Council must:

- Ensure that development is not permitted in areas of flood risk, particularly floodplains and coastal areas subject to flooding, except where there are no suitable alternative sites available in areas at lower risk that are consistent with the objectives of proper planning and sustainable development.
- Adopt a sequential approach to spatial planning which aims to avoid flood risk, where possible, substitute less vulnerable uses where avoidance is not possible, and mitigate and manage the risk where avoidance and substitution are not possible.
- A precautionary approach should also be applied to flood risk management to reflect uncertainties in flooding datasets and risk assessment techniques and the ability to predict the future climate, the performance of existing flood defences and the extent of future coastal erosion.

Meath County Council will assess planning applications for development in accordance with the provisions of these Guidelines. The Council will ensure that only developments consistent with the overall policy and technical approaches of these Guidelines will be approved and permission may be refused where flood issues have not been, or cannot be, addressed successfully and where the presence of unacceptable residual flood risks to the development, its occupants or users and adjoining property remains. It should be noted that under the Planning and Development Acts 2000-2012 if planning permission is refused for the reason that the proposed development is in an area which is at risk of flooding, compensation is excluded.

The EU Floods Directive was introduced in 2007 and sets out how member states must have a plan for the management of flood risk. The aims of the Directive will be achieved through a series of requirements which will be carried out at river catchment level and also in coastal zones. The Floods Directive required Member States to undertake a national preliminary flood risk assessment by 2011 at river catchment level to identify areas where significant flood risk exists or might be considered likely to occur. Members States are also required to prepare catchment-based Flood Risk Management Plans (FRMPs), by 2015 that will set out flood risk management objectives, actions and measures. Under the Floods Directive, the EU recognises the importance of land use management and spatial planning as a key tool in flood risk management. In considering the zoning at LAP/ Town Plan stage and in the preparation of development and zoning objectives for urban centres to be subsumed into the County Development Plan any potential issue between zoning and the flood risk assessment will be required to be addressed in order to minimise and/ or mitigate the potential conflict, by means of alternative land use zoning objectives or discontinuing the land use zoning objective and/ or phasing pending mitigation.

Meath County Council, Fingal County Council and the Office of Public Works (OPW), recognised the high levels of existing flood risk in the Fingal/East Meath area. In response to this and in recognition of the requirements of the Floods Directive, the Fingal/East Meath Flood Risk Assessment and Management Study (FEM FRAMS) was commissioned. The FEM FRAMS is a catchment-based flood risk assessment and management study of twenty-three rivers and their catchments, including the Broadmeadow River, the Nanny River and their tributaries was commissioned.

Information gleaned from the FEMFRAMS informed the preparation of the Strategic Flood Risk Assessment (SFRA) which has been carried out by JBA Consulting for the purposes of the Development Plan review. Other existing approved FRAM studies, including the Tolka River Flood Study, the Kilcock Flood Study, the Swan River Flood Risk Assessment and OPW flood mapping has also informed this process. Please refer to Appendix 6 for details of the 'Strategic Flood Risk Assessment for County Meath'. Chapter 4 of the assessment sets out the sources of flood data used and the methodology behind the preparation of the assessment and the flood zone maps and Chapter 10 sets out recommended flood risk policies and objectives. The Strategic Flood Risk Assessment for County Meath utilises the most up to date flooding data for the County available at the time of plan preparation. It should be noted that this assessment will be reviewed (as per OBJ 10) following the publication of the flood mapping which is being produced as part of the national Catchment Flood Risk Assessment and Management (CFRAM) Studies.

Policies

It is the policy of Meath County Council to:

- **WS POL 29** To have regard to the "Planning System and Flood Risk Management – Guidelines for Planning Authorities" (DoEHLG/OPW, 2009) through the use of the sequential approach and application of the Justification Tests for Development Management and Development Plans, during the period of this Plan.
- **WS POL 30** To have regard to the findings and recommendations of the current Strategic Flood Risk Assessment prepared as part of the County Development Plan review. See Appendix 6.
- **WS POL 31** To ensure that all developments have regard to the surface water management policies in the Greater Dublin Strategic Drainage Study (GDSDS). Compliance with the recommendations contained in Technical Guidance Document, Volume 2, Chapter 4 of the Greater Dublin Strategic Drainage Study shall be required in all instances.
- **WS POL 32** To ensure that a flood risk assessment is carried out for any development proposal, where flood risk may be an issue in accordance with the "Planning System and Flood Risk Management – Guidelines for Planning Authorities" (DoECLG/OPW, 2009). This assessment shall be appropriate to the scale and nature of risk to the potential development.
- **WS POL 33** To consult with the Office of Public Works in relation to proposed developments in the vicinity of drainage channels and rivers for which the OPW are responsible, and the Council will, retain a strip of 10 metres on either side of such channel where required, to facilitate access thereto.
- **WS POL 34** To consult, where necessary, with Inland Fisheries Ireland, the National Parks and Wildlife Service and other relevant agencies in the construction of flood alleviation measures in County Meath.
- **WS POL 35** To ensure that flood risk management is incorporated into the preparation of Local Area Plans and Town Development Plans in accordance with 'The Planning System and Flood Risk Management - Guidelines for Planning Authorities (2009)'
- **WS POL 36** To have regard to the recommendations of the Fingal East Meath Flood Risk Assessment and Management Study, the Eastern, North West and Neagh Bann Chapter 7 - Water, Drainage and Environmental Services Meath County Development Plan 2013-2019 144 Catchment Flood Risk Assessment and Management Study when finalised and approved Objectives It is an objective of Meath County Council:
- **WS OBJ 11** To undertake a review of the 'Strategic Flood Risk Assessment for County Meath' following the publication of the flood mapping which is being produced as part of the Catchment Flood Risk Assessment and Management (CFRAM) Studies.
- **WS OBJ 12** To design flood relief measures to ensure appropriate protection for alluvial woodland (i.e. a qualifying interest) along the Boyne.
- **WS OBJ 13** To design flood relief measures to protect the conservation objectives of Natura 2000 sites and to avoid indirect impacts of conflict with other qualifying interests or Natura 2000 sites.

- **WS OBJ 14** To promote positive flood relief measures that can enhance habitats in the Boyne floodplain such as swales, constructed wetland basins etc.
- **WS OBJ 15** To seek to ensure that construction works are designed so as not to result in surface water runoff into cSAC or SPAs either directly or indirectly via a watercourse.

Louth County Development Plan 2015 - 2021

ENV 31 Development plans and local area plans should be consistent with the planning system and Flood Risk Management Guidelines – Guidelines for Planning Authorities 2009, and adopt strategic, integrated, sustainable and proactive approach to catchment management to avoid and reduce flood risk within the region, managing the risk from:

- tidal effects around estuaries and along the coast including the implications of the latest predictions for sea level rise;
- fluvial flooding along river corridors and other significant watercourses resulting from catchments within and beyond the Region and other sources of flooding; and
- pluvial flooding resulting from surface water runoff and capacity constraints in surface water drainage systems.

ENV 32 Where new or upgraded flood/coastal defences are shown to be essential to protect existing development, all such proposals shall be subject to the Floods and Habitats Directive and all other statutory requirements;

ENV 33 New development should be avoided in areas at risk of flooding. However, it is recognised and acknowledged that the key urban settlements are at risk from coastal and fluvial flooding, but their continued growth and expansion can be facilitated through the careful expansion of the urban core and the implementation of appropriate land uses in areas at risk. New developments within a flood plain, will not only be at risk of flooding, but can add cumulatively to the risk of flooding elsewhere, and serve to undermine the flood plain's natural function of accommodating and attenuating flood flows. Accordingly, to minimise flood risk and help maintain their natural function it is essential to avoid development within flood plains wherever possible. However, where justification to permit development can be provided on sustainability and planning grounds, cognisance must be taken of outputs of CFRAM Studies in the provision comprehensive flood protection and management measures; which should be fully implemented in conjunction with any development in flood risk areas. Appropriate land uses should also be incorporated into those areas at risk.

ENV 34 County development plans and local area plans shall include a Strategic Flood Risk Assessment. Existing and proposed zoning of lands for development in areas at risk of flooding should follow the sequential approach and justification test set out in the DECLG Guidance on Flood Risk Management. A flood plain may be defined as flood zone B, which defines the extent of a flood event with a 0.1% annual probability of exceedance as set out in the DECLG Flood Risk Management Guidelines, 2009.

ENV 35 SUDS based drainage plans should be prepared in conjunction with local area plans to optimise flood/runoff management potential of the areas. Reducing the impact of existing and future development on flood risk can be achieved by adequately controlling runoff from new developments and associated areas, through employing Sustainable Drainage Systems, such that development impact is neutral or positive on flooding.

ENV 36 Through flood plain protection and SUDS, local authorities should incorporate improvements in biodiversity and amenity for existing and proposed developments. Issues such as coastal squeeze and compensatory measures to mitigate impact of climate change on existing habitat sites should be considered. Appropriate SUDS planning will also address both water quality and amenity dimensions.

ENV 37 Direct strategically significant growth to low risk areas. Strategically significant projects and infrastructure should, as a rule, be located in low risk areas.

ENV 38 An evidence-based approach should be adopted to the application of sequential approach and justification test in zoning of flood susceptible lands for development. This should be transparent and use

objective criteria appropriate to proposed zoning transparency and objective criteria will ensure that zoning process optimizes economic, social and environmental value.

ENV 39 Founded on the precautionary approach to dealing with flood risk, measures such as flood compensation storage works or new hard-engineered flood defences alone, will not be acceptable as justification for development in a flood plain. The provision of compensation storage or hard defences alone shall not be considered sufficient justification to permit a development. Such measures will only be considered as part of a proposal if development/zoning is warranted by justification test on planning and sustainability grounds in the first instance, and no alternative site is available.

ENV 40 Recognising the concept of coastal evolution and fluvial flooding as part of our dynamic physical environment, an adaptive approach to working with these natural processes shall be adopted. The focus of a flood management strategy should not solely be driven by conservation of existing lands. It should recognise that marshes, mud flats and other associated eco-systems evolve and degenerate and appropriate consideration should be given to the realignment of defences and use of managed retreat and sacrificial flood protection lands to maintain such habitats as part of an overall strategy.

APPENDIX B

OPW FLOODMAP REPORT

OPW *National Flood Hazard Mapping*

Summary Local Area Report

This Flood Report summarises all flood events within 2.5 kilometres of the map centre.

The map centre is in:

County: Meath

NGR: O 070 740

This Flood Report has been downloaded from the Web site www.floodmaps.ie. The users should take account of the restrictions and limitations relating to the content and use of this Web site that are explained in the Disclaimer box when entering the site. It is a condition of use of the Web site that you accept the User Declaration and the Disclaimer.

Map Scale 1:27,870

Map Legend

- Flood Points
- Multiple / Recurring Flood Points
- Areas Flooded
- Hydrometric Stations
- Rivers
- Lakes
- River Catchment Areas
- Land Commission *
- Drainage Districts *
- Benefiting Lands *

* Important: These maps do not indicate flood hazard or flood extent. Thier purpose and scope is explained in the Glossary.

13 Results

1. Flooding at Bus Station, Donore Rd, Drogheda, Co. Louth on 24th Oct 2011
County: Louth
Start Date: 24/Oct/2011
Flood Quality Code: 3
Additional Information: Reports (1) More Mapped Information

2. R152 South of Drogheda Recurring
County: Meath
Start Date:
Flood Quality Code: 3
Additional Information: Reports (1) More Mapped Information

3. Platin Road Drogheda Recurring
County: Louth
Start Date:
Flood Quality Code: 3
Additional Information: Reports (3) More Mapped Information

4. Donore Road Drogheda Recurring
County: Louth
Start Date:
Flood Quality Code: 3
Additional Information: Reports (4) Press Archive (1) More Mapped Information

5. Wellington Quay Drogheda Recurring
County: Louth
Start Date:
Flood Quality Code: 3

Report Produced: 18-Dec-2019 16:51

Additional Information: Reports (4) More Mapped Information

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6. Simcock's Lane/Trinity Street Junction Recurring — Start Date:

County: Louth — Flood Quality Code: 3

Additional Information: Reports (2) More Mapped Information

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7. River Boyne - Upstream Drogheda LB (Recurring) — Start Date:

County: Louth — Flood Quality Code: 3

Additional Information: Reports (1) More Mapped Information

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8. Rathmullan Road Recurring — Start Date:

County: Louth — Flood Quality Code: 3

Additional Information: Reports (3) More Mapped Information

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9. Railway Bridge on R152, Drogheda Recurring — Start Date:

County: Meath — Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

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10. Cullen Road Drogheda Recurring — Start Date:

County: Louth — Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

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11. Sheephouse Road, Donore Recurring — Start Date:

County: Meath — Flood Quality Code: 4

Additional Information: Reports (1) Press Archive (1) More Mapped Information

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12. Elmwood/McEvoy's Lane Recurring — Start Date:

County: Louth — Flood Quality Code: 4

Additional Information: Reports (2) More Mapped Information

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13. Johnstown Slip Road Recurring — Start Date:

County: Louth — Flood Quality Code: 4

Additional Information: Reports (1) More Mapped Information

8.0 BIODIVERSITY; FLORA & FAUNA

8.1 INTRODUCTION

This chapter provides an assessment of the impacts of the Proposed Development (as described in Chapter 2) on the ecological environment, i.e. flora and fauna. It has been compiled in compliance with the EIA Directive, the Planning and Development Act 2000 as amended, and the European Commission's guidance on the preparation of the EIA Report, and follows the EPA Draft EIA Report Guidelines 2017.

8.2 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development consists of the construction and operation of a 110kV GIS Substation, 4 number transformers and Client Control Building within a fenced compound; a 49kVa electrical supply to the 110kV GIS Substation; 2 number dropdown 110kV transmission lines comprising two new masts (c. 16 meters in height) and underground 110kV transmission lines; and all associated and ancillary development.

A full description of the Proposed Development is provided in Chapter 2 (Description of the Proposed Development).

8.3 METHODOLOGY

This chapter of the EIA Report concentrates on ecological features within the Proposed Development site of particular significance, primarily designated habitats and species. This includes habitats/species listed in Annex I, II and IV of the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna), protected plants listed in the Flora Protection Order (S.I. No. 356/2015 - Flora (Protection) Order, 2015) and other semi-natural habitats of conservation value.

Article 3 of the EIA Directive requires that "The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;"

Annex IV point 4 of the EIA Directive requires "A description of the factors specified in Article 3(1) likely to be significantly affected by the project: … biodiversity (for example fauna and flora)

The obligation to undertake appropriate assessment derives from Article 6(3) and 6(4) of the Habitats Directive. The first test is to establish whether, in relation to a particular plan or project, appropriate assessment is required. This is termed AA screening. Details of the provisions of the Planning and Development Act 2000 (section 177U and 177V) in terms of the trigger for requirement for an "appropriate assessment" are presented in a Report for the purposes of Appropriate Assessment Screening undertaken by Moore Group for the Proposed Development which is presented as Appendix 8.1 to this chapter.

8.3.1 Policy & Guidance

8.3.1.1 EU Habitats Directive

The "Habitats Directive" (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European level as well as at a national level. A "Special Conservation Area" or SAC is a designation under the Habitats Directive. The Habitats Directive sets out the protocol for the protection and management of SACs.

The Directive sets out key elements of the system of protection including the requirement for "Appropriate Assessment" of plans and projects.

8.3.1.2 Birds Directive

The "Birds Directive" (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection (Annex I species). Appendix I of the Directive indicates Annex I bird species as listed on the Birds Directive. A "Special Protection Area" or SPA, is a designation under the Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites.

Both the Habitats Directive and the Birds Directive have been transposed into Irish law by one set of regulations (i.e. The European Communities (Birds and Natural Habitats) Regulations 2011 to 2015 as amended).

8.3.1.3 Wildlife Acts (1976 - 2018)

The primary domestic legislation providing for the protection of wildlife in general, and the control of some activities adversely impacting upon wildlife is the Wildlife Act of 1976. The aims of the wildlife act according to the National Parks and Wildlife Service (www.npws.ie) are "... to provide for the protection and conservation of wild fauna and flora, to conserve a representative sample of important ecosystems, to provide for the development and protection of game resources and to regulate their exploitation, and to provide the services necessary to accomplish such aims." All bird species are protected under the Wildlife Act of 1976. The Wildlife (Amendment) Act of 2000 amended the original Wildlife Act to improve the effectiveness of the Wildlife Act of 1976 to achieve its aims.

8.3.2 Habitat Survey

The habitat survey was carried out in three stages, firstly through desktop research to determine existing records in relation to habitats and species present in the Proposed Development site (i.e. the area of the Proposed Development). This included research on the National Parks and Wildlife Service (NPWS) metadata website, the National Biodiversity Data Centre (NBDC) database and a literature review of published information on flora and fauna occurring in the wider area around the Proposed Development.

Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology. Interactions in terms of the chapters on these topics presented in this EIA Report were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the Proposed Development site.

The second phase of the survey involved a site visit to establish the existing environment in the footprint of the Proposed Development area. Areas which were highlighted during desktop assessment were investigated in closer detail according to the Heritage Council Best Practice Guidance for Habitat Survey and Mapping (Smith *et al*., 2011). Habitats in the Proposed Development area were classified according to the Heritage Council publication "A Guide to Habitats in Ireland" (Fossitt, 2000). This publication sets out a standard scheme for identifying, describing and classifying wildlife habitats in Ireland. This form of classification uses codes to classify different habitats based on the plant species present. Species recorded in this report are given in both their Latin and English names. Latin names for plant species follow the nomenclature of "Webb's An Irish Flora" (Parnell & Curtis, 2012).

Habitats were surveyed initially as part of the Permitted Development site surveys on 5 February and 17 April 2019 by conducting a study area walkover covering the main ecological areas identified in the desktop assessment. The Proposed Development site was re visited on the 3 Sept 2020 to confirm any change in the habitat since the 2019 surveys. A photographic record was made of features of interest.

Signs of mammals such as badgers and otters were searched for while surveying the study area noting any sights, signs or any activity in the vicinity especially along adjacent boundaries.

A Bat Detector Survey was not carried out as there are no potential roosts, buildings or trees to be removed as part of the Proposed Development. This is not considered to affect the overall assessment given the relatively low value of the shortened internal hedgerows and the availability of surrounding linear woodland.

The results of bird surveys undertaken for the Permitted Development site surveys from 5 February and 17 April 2019 are pertinent and included along with data collected in the 2020 survey.

Following desktop assessment, an evaluation of the Proposed Development Site and determination of the potential impacts on the flora and fauna of the area is based on the following guidelines and publications:

- EPA Draft EIA Report Guidelines 2017;
- European Commission Guidance on the Preparation of the EIA Report (2017)
- European Commission Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (2013);
- Assessment of plans and projects significantly affecting Natura 2000 sites (EC, 2002);
- Managing Natura 2000 Sites (EC, 2000) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (EC, 2000);
- Managing Natura 2000 Sites (EC, 2018) Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC "*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*" (EC, 2018);
- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DEHLG, Rev. Feb. 2010); and

- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM, 2019).

The following resources assisted in the production of this chapter of the report:

- Ordnance Survey Ireland maps;
- OSI, Google and Bing Aerial photography (1995 – 2019);
- NPWS Mapviewer: http://www.npws.ie/en/MapsData/;
- Designated sites (SACs, SPAs, NHAs);
- Records of protected species from 10km squares; and
- National Biodiversity Data Centre Records and Maps.

Other environmental information for the area was reviewed, e.g. in relation to soils, geology, hydrogeology and hydrology. Interactions in terms of the chapters on these topics presented in this EIA Report were important in the determination of source vector pathways and links with potentially hydrologically connected areas outside the Proposed Development site.

8.4 RECEIVING ENVIRONMENT

The Proposed Development site is located in the IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath, bounded along its western extent by the M1 motorway.

Construction work on the Permitted Development (described in Chapter 15 of this EIA Report) has commenced and the site has been cleared and prepared for development. The Proposed Development area comprises a small section of the open field area to the north of the indicative Masterplan Development site which is currently spoil and bare ground.

The following is a description of the flora and fauna of the existing environment in the study area.

8.4.1 Designated Conservation Areas

Department of the Environment, Heritage and Local Government (2009) Guidance on Appropriate Assessment suggests an assessment of European sites within a zone of impact of 15 km. This distance is a guidance only and the zone of impact has been identified taking consideration of the nature and location of the Proposed Development to ensure all European sites with connectivity to it are considered in terms of a catchment-based assessment.

The zone of impact may be determined by connectivity to the Proposed Development in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of pathways (dilution and dispersion; intervening ‘buffer’ lands, roads etc.); and
- Sensitivity and location of ecological features.

The guidance provides that it is necessary to identify the sites and compile information on their qualifying interests and conservation objectives. In preparation

for this, the potential for source pathway receptor connectivity is firstly identified and detailed information is then provided on sites with connectivity.

European sites that are located within 15 km of the Proposed Development are listed in Table 8.1 and presented in Figure 8.1, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on the 25 August 2020.

Table 8.1 Details of European sites within the potential zone of influence of the project.

Site Code	Site name	Distance (km)[1]
001459	Clogher Head SAC	13.35
001957	Boyne Coast and Estuary SAC	5.18
002299	River Boyne and River Blackwater SAC	1.01
004080	Boyne Estuary SPA	3.98
004158	River Nanny Estuary and Shore SPA	8.38
004232	River Boyne and River Blackwater SPA	1.30

The nearest European sites to the Proposed Development are associated with the River Boyne and include the River Boyne and River Blackwater SAC (Site Code 002299), which is located c. 1km to the north, and the River Boyne and River Blackwater SPA (Site Code 004232), which is located c. 1.3 km to the north.

The Proposed Development is located within the catchment of Boyne River, approximately 1 km to the south of the River and on the outskirts of Drogheda town. Immediately to the west of the proposed Project site is the M1 Motorway. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no watercourses in the vicinity of the Proposed Development site. This was confirmed during fieldwork.

Downstream, the waters of the River Boyne enter the River Boyne Estuary with its European sites, the Boyne Coast and Estuary SAC (Site Code 001957) and the Boyne Estuary SPA (Site Code 004080), which are located respectively approximately 5.1km and c. 4km to the northeast of the Proposed Development.

There is no connectivity to any other European sites.

[1] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS. Connectivity along hydrological pathways may be significantly greater.

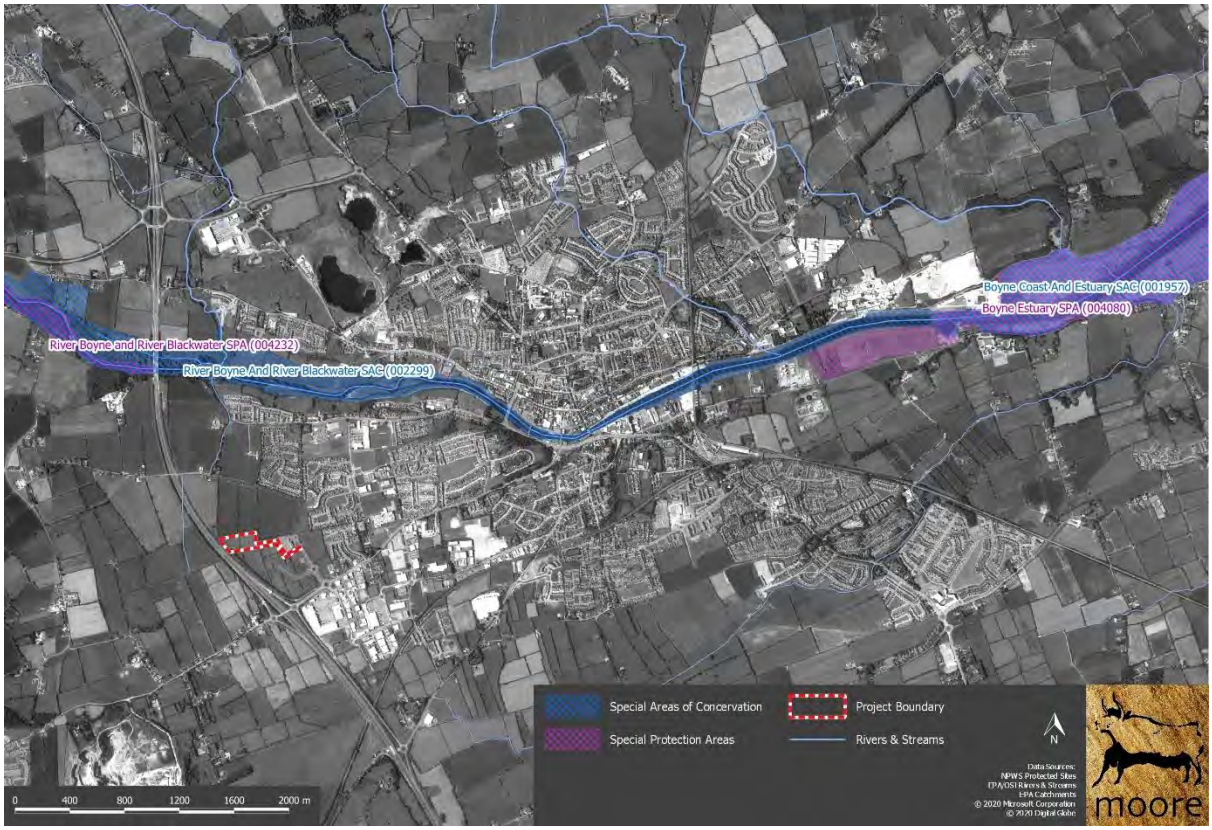

Figure 8.1 Site Location in relation to nearby European sites.

8.4.2 Non-Designated Habitats

The Proposed Development area currently comprised spoil and bare ground.

The western and northern perimeter of the proposed development area is comprised of a border of mixed broadleaved woodland partly planted during the development of the adjacent Motorway and also the development of the IDA park.

The main habitats are presented on the recent aerial photography in Figure 8.2. A list of habitats recorded and their corresponding Fossitt codes is presented in Table 8.2.

Table 8.2 Details of habitats recorded and their corresponding Fossitt codes.

Habitat	Habitat Category	Habitat Type
(W) Woodland	(WD) Modified Woodland	(WD1) Mixed woodland
	(WS) Scrub/Transitional Woodland	(WS1) Scrub
	(WL) Linear woodland	(WL1) Hedgerows
(E)	(ED) Disturbed ground	(ED2) Spoil and bare ground
(B)	(BL) Built land	(BL3) Buildings and artificial surfaces

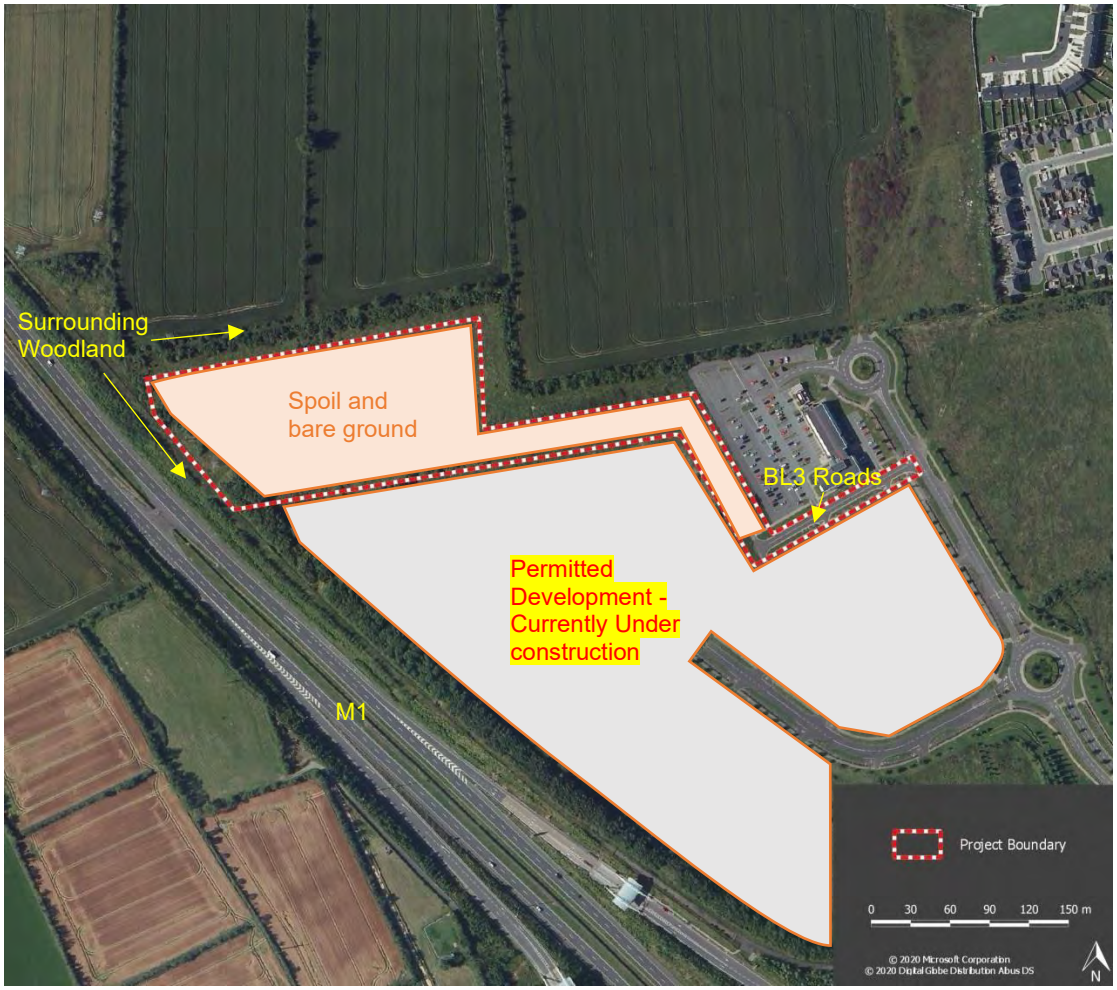

Figure 8.2 Habitats recorded in the Proposed Development area.

8.4.2.1 Hedgerows/Woodland (WL1/WD1)

The western and northern perimeter is comprised of a border of mixed broadleaved woodland (WD1).

Species include Sycamore (*Acer pseudoplatanus*), Hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*), Ash (Fraxinus excelsior), Scot's Pine (*Pinus sylvestris*) and abundant Bramble (*Rubus fruticosus* agg.) and Ivy (*Hedera helix*). There are scattered immature tress including Beech (*Fagus sylvatica*), Alder (*Alnus glutinosa*) and a single large specimen of Cotoneaster tree (*Cotoneaster cornubia*).

The understorey of denser pockets is populated with grass (*Dactylis glomerata*), Cleavers (*Galium aparine*), Cow parsley (*Anthriscus sylvestris*) along with Bush vetch (*Vicia sepium*) and Lesser celandine (*Ranunculus ficaria*).

8.4.3 Fauna

8.4.3.1 Badgers

There were no badger setts along field boundaries which would be disturbed and no signs of badgers in the study area. The nearest National Biodiversity Data Centre (NBDC) record is a record c. 500 m to the north on the M1 Motorway.

8.4.3.2 Otters

There were no signs of otters in the study area. There is no connectivity to streams or rivers leading to the River Boyne and therefore no suitable habitats on site for otters.

8.4.3.3 Bats

The NBDC database was consulted for any records of bats from the two 1 km squares in which the Proposed Development is located; O0673 and O0674 as well as a specific polygon covering the indicative Masterplan Development area which includes the Proposed Development. There are no records of bats from the site.

All trees within the site boundary are relatively young, with few potential roost features (e.g. cavities or crevices) observed, and so considered to have negligible suitability for bats.

8.4.3.4 Birds

All nesting birds are protected under the Wildlife Acts 1976-2018. Species recorded included regular passerines such as Great Tit (*Parus major*), Chaffinch (*Fringilla coelebs*), Blackbird (*Turdus merula*), Wren (*Troglodytes troglodytes*). A list of breeding bird species recorded during fieldwork in February and April 2019 (overall site assessment) and August 2020 is presented in Table 8.3 below.

It can be noted that the level of development on site and distance from the coastal SPAs do not present opportunities to support the bird species (predominantly waders) for which the Boyne Estuary SPA (c. 4km) and River Nanny Estuary and Shore SPA (8.4km) are designated.

Table 8.3 Details of birds encountered during fieldwork in April 2019 and August 2020.

Birds	Scientific Name	BWI	Habitat Type
Blackbird	*Turdus merula*	Green	Dense woodland to open moorland, common in gardens
Magpie	*Pica pica*	Green	Hedgerows, gardens and farmland
Chaffinch	*Fringilla coelebs*	Green	Hedgerows, gardens and farmland
Great Tit	*Parus major*	Green	Woods, hedges, gardens
Goldfinch	*Carduelis carduelis*	Green	Open woodland, gardens and farmland
Woodpigeon	*Columba palumbus*	Green	Gardens, woods, hedges
Wren	*Troglodytes troglodytes*	Green	Low cover anywhere, especially woodlands

8.4.5 Habitat Evaluation

The ecological value of the site was assessed following the guidelines set out in the Chartered Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (2019) and according to the Natura Scheme for evaluating ecological sites (after Nairn & Fossitt, 2004). Additionally, the TII Guidelines (formerly NRA) for Assessment of Ecological Impacts of National Road Schemes (NRA, 2009) outlines the methodology for evaluating ecological impacts. Assessments on the evaluation were made using geographic frames of reference, e.g. European, National, Regional or Local.

There are no rare or protected habitats recorded inside the Proposed Development boundary. The Proposed Development area may be considered of Low Local Ecological Value.

8.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

8.5.1 Impacts on Habitats

The nearest European sites are associated with the River Boyne to the north including the River Boyne and River Blackwater SAC and SPA.

There will be no direct impacts on the River Boyne and River Blackwater European sites and there would be no habitat loss or fragmentation as a result of the Proposed Development. Having considered direct impacts and ruling them out, indirect impacts are then considered in terms of source pathway vectors.

There is no connectivity with the River Boyne. There will be no indirect impacts on the River Boyne and River Blackwater European sites.

The Proposed Development area habitat is of low ecological value.

Hedgerows/Woodland (WL1/WD1)
There will be no effects on the surrounding woodland as the Proposed Development footprint or the effects of operation of the Proposed Development will not impact on this habitat..

8.5.2 Impacts on Fauna

None of the qualifying habitats or species of the European sites occur under the footprint of the proposed works areas.

The Proposed Development area habitat is of low ecological value for fauna.

No potential bat roost features were identified within the site boundary, so there is no risk of direct impacts on any roosts.

If any new lighting is directed towards the boundaries of the site, there is a risk of indirect impacts on foraging bats, and on potential roost features in the surrounding area for the operational phase.

8.5.3 Do Nothing Scenario

The Do Nothing scenario would involve the Proposed Development not taking place. The baseline environment would not change. Given the Proposed Development is located in an area of low ecological value, the do nothing scenario would have a neutral impact on biodiversity.

8.6 REMEDIAL AND MITIGATION MEASURES

'Bat-sensitive' lighting techniques will be incorporated into the lighting plan, which will avoid or minimise any potential impacts of lighting on bats for the operational phase.

'Bat-sensitive lighting' for this development would have the following design principles:

- If lighting is required near site boundaries, the lighting poles will be installed on the boundary and will face inwards (i.e. towards the centre of the site). This will ensure that lighting is not directed outside the site boundaries.

- All lights around the site boundary will be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill.
- The intensity of lighting will be kept to the minimum level required for safety and security.
- Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Mercury, metal halide or high-UV LED bulbs will not be used.

These measures will apply both to temporary lighting during the construction of the Proposed Development, and to permanent lighting during the operation of the development.

No further mitigation measures are required with regard to biodiversity as no further impacts are anticipated.

8.7 PREDICTED IMPACTS OF THE PROPSED DEVELOPMENT

The western and northern boundary of the site provides good commuting and feeding opportunity for bats and this habitat will be retained for the operational phase of the Proposed Development.

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a ***neutral imperceptible*** effect on biodiversity during both the construction and operation phases of the Proposed Development.

8.8 CUMULATIVE IMPACTS

There will be no in-combination or cumulative effects from the Proposed Development with existing developments, Permitted Development or indicative Masterplan Development as listed in Chapter 3 Appendix 3.1.

With the employment of appropriate mitigation measures with regard to local biodiversity, as outlined in this EIAR and the Draft CEMP , the Proposed Development will have a ***neutral imperceptible*** effect on biodiversity during the construction or operational phase of the Proposed Development. All significant developments are similarly required to present an assessment of the impact on local biodiversity and this is considered by the planning authority in terms of national regional and local plans and policies for biodiversity management. Given the consideration of other Projects and Plans and that the Proposed Development will have no significant effects on biodiversity, there are no predicted in-combination effects on biodiversity.

The potential cumulative impacts of the construction of the Proposed Development with the overall indicative Masterplan Development were considered in relation to the River Boyne and its associate European Sites. As there is no connectivity to the river during construction or operation, effects on these sites can be ruled out.

8.9 RESIDUAL IMPACTS

'Bat-sensitive' lighting techniques will be incorporated into the lighting plan, which will avoid or minimise any potential impacts of lighting on bats for the operational phase.

With the employment of appropriate mitigation measures with regard to local biodiversity, the Proposed Development will have a ***neutral imperceptible*** effect on biodiversity.

8.10 INTERACTIONS

Biodiversity on:

Air Quality and Climate

Mitigation measures proposed for air quality during the construction phase of the Proposed Development will ensure that dust generation is minimised and the effect on biodiversity will be short term, imperceptible and neutral.

Interactions are addressed fully in Chapter 17 of this EIA Report.

8.11 REFERENCES

- CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK And Ireland Terrestrial, Freshwater, Coastal and Marine September 2018 Version 1.1 - Updated September 2019.
- Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).
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APPENDIX 8.1

APPROPRIATE ASSESSMENT SCREENING

MOORE GROUP – ENVIRONMENTAL SERVICES (2020)

Report for the purposes of Appropriate Assessment Screening

as required under Article 6(3) of the Habitats Directive
(Council Directive 92/43/EEC)

OLDBRIDGE
Grid Connection SID

Prepared by: Moore Group – Environmental Services

7 October 2020

On behalf of
An Bord Pleanála

Project Proponent	CAP Developments LLC
Project	Drogheda Data Storage Facility Grid Connection SID
Title	Report for the purposes of Appropriate Assessment Screening Drogheda Data Storage Facility Grid Connection SID

Project Number	19041	**Document Ref**	19041 Drogheda DSF Grid Connection AAS1 Rev3.docx	
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Moore Archaeological and Environmental Services Limited				

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Appendix A – Finding of No Significant Effects Report

Abbreviations

AA	Appropriate Assessment
EEC	European Economic Community
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information System
LAP	Local Area Plan
NHA	Natural Heritage Area
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
OSI	Ordnance Survey Ireland
pNHA	proposed Natural Heritage Area
SAC	Special Area of Conservation
SPA	Special Protection Area
SuDS	Sustainable Drainage System
WFD	Water Framework Directive

1. Introduction

1.1. General Introduction

This Appropriate Assessment screening report has been prepared to support a Planning Application for the Proposed Development (described in Section 3 below). This report contains information required for the competent authority to undertake screening for Appropriate Assessment (AA) on the potential construction and operation of a grid connection and substation to a permitted Data Storage Facility at the IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath (hereafter referred to as the Proposed Development) to significantly affect European sites.

Screening is the process that addresses the first two tests of Article 6(3) of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (referred to as the Habitats Directive):

I). whether a plan or project is directly connected to or necessary for the management of the site, and

II). whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

Having regard to the provisions of the Planning and Development Act 2000 (section 177U and 177V), the purpose of a screening exercise under section 177U of the PDA 2000 is to assess, in view of best scientific knowledge, if the Proposed Development, individually or in combination with another plan or project is likely to have a significant effect on a European site.

If it cannot be excluded on the basis of objective information that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site then it is necessary to carry out a stage 2 appropriate assessment.

When screening the project, there are two possible outcomes:

- the project poses no risk of a significant effect and as such requires no further assessment; and
- the project has potential to have a significant effect (or this is uncertain) and AA of the project is necessary.

This report has been prepared by Moore Group - Environmental Services to support an application for planning permission for the Proposed Development to allow Meath County Council to carry out AA screening in relation to the Proposed Development. The report was compiled by Ger O'Donohoe (B.Sc. Applied Aquatic Sciences (GMIT, 1993) & M.Sc. Environmental Sciences (TCD, 1999)) who has 25 years' experience in environmental impact assessment and has completed numerous Appropriate Assessment Screening Reports and Natura Impact Statements on terrestrial and aquatic habitats for numerous Data Storage Facilities.

1.2. Legislative Background - The Habitats and Birds Directives

It is necessary that the Proposed Development has regard to Article 6 of the Habitats Directive. This is transposed into Irish Law by the European Communities (Birds and Natural Habitats) Regulations, 2011 to 2015 (referred to as the Habitats Regulations).

The Habitats Directive is the main legislative instrument for the protection and conservation of biodiversity in the European Union (EU). Under the Habitats Directive, Member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in a EU context. The Planning and Development Act 2000 (section 177U and 177V) govern the requirement to carry out appropriate assessment.

The Birds Directive (Council Directive 2009/147/EC on the Conservation of Wild Birds), transposed into Irish law by the Habitats Regulations 2011, is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Birds Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention.

SACs designated under the Habitats Directive and SPAs, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs and SPAs. These sites are also referred to as European sites.

Articles 6(3) and 6(4) of the Habitats Directive set out the requirement for an assessment of proposed plans and projects likely to affect Natura 2000 sites.

Article 6(3) establishes the requirement to screen all plans and projects and to carry out a further assessment if required (Appropriate Assessment (AA)). Article 6(4) establishes requirements in cases of imperative reasons of overriding public interest:

> ***Article 6(3):*** *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subjected to an appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*
>
> ***Article 6(4):*** *"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of*

overriding public interest, including those of a social or economic nature, Member States shall take all compensatory measures necessary to ensure that the overall coherence of the Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to the beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."

2. Methodology

The Commission's methodological guidance (*Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC* (2002), and *Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (2018)) promotes a four-stage process to complete the AA and outlines the issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

Stages 1 and 2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1 Screening: This stage examines the likely effects of a project either alone or in combination with other projects upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant. In order to screen out a project, it must be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

Stage 2 Appropriate Assessment: In this stage, there is a consideration of the impact of the project with a view to ascertain whether there will be any adverse effect on the integrity of the Natura 2000 site either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are predicted impacts, an assessment of the potential mitigation of those impacts is considered.

Stage 3 Assessment of Alternative Solutions: This stage examines alternative ways of implementing the project that, where possible, avoid any adverse impacts on the integrity of the Natura 2000 site.

Stage 4 Assessment where no alternative solutions exist and where adverse impacts remain: Where imperative reasons of overriding public interest (IROPI) exist, an assessment to consider whether compensatory measures will or will not effectively offset the damage to the sites will be necessary.

To ensure that the Proposed Development complies fully with the requirements of Article 6 of the Habitats Directive and all relevant Irish transposing legislation, Moore Group compiled this report to support an application for planning permission for the Proposed Development to allow An Bord Pleanála to carry out AA screening in relation to the Proposed Development to determine whether the Proposed Development, individually or in combination with another plan or project will have a significant effect on a Natura 2000 site.

2.1. Guidance

This report has been compiled in accordance with guidance contained in the following documents:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 rev.).
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. Circular NPWS 1/10 & PSSP 2/10.
- Assessment of Plans and Projects Significantly Affecting Natura 2000 sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission Environment Directorate-General, 2001); hereafter referred to as the EC Article Guidance Document.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC Environment Directorate-General, 2000); hereafter referred to as MN2000.
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitat's Directive 92/43/EEC (EC, 2018).

2.2. Data Sources

Sources of information that were used to collect data on the Natura 2000 network of sites, and the environment within which they are located, are listed below:

- The following mapping and Geographical Information Systems (GIS) data sources, as required:
    - National Parks & Wildlife (NPWS) protected site boundary data;
    - Ordnance Survey of Ireland (OSI) mapping and aerial photography;
    - OSI/Environmental Protection Agency (EPA) rivers and streams, and catchments;
    - Open Street Maps;
    - Digital Elevation Model over Europe (EU-DEM);
    - Google Earth and Bing aerial photography 1995-2020;
- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from www.npws.ie including:
    - Natura 2000 - Standard Data Form;
    - Conservation Objectives;
    - Site Synopses;

- National Biodiversity Data Centre records;
    - Online database of rare, threatened and protected species;
    - Publicly accessible biodiversity datasets.
- Status of EU Protected Habitats in Ireland. (National Parks & Wildlife Service, 2019); and
- Relevant Development Plans;
    - Meath County Development Plan 2013-2019
    - Draft Meath County Development Plan 2020-2026
    - Louth County Development Plan 2015-2021

3. Description of the Proposed Development

The Proposed Development is described in Chapter 2 of this EIA Report and briefly consists of:

The Proposed Development is to be located on a site within the Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. The development is located to the north of the data storage facility permitted under Reg. Ref.: LB/191735. The site is situated within the townland of Rathmullan and comprises an area of c. 3.077 hectares.

The Proposed Development primarily comprises the provision of a substation compound and associated dropdown 110kV transmission lines, along with associated and ancillary works and is described as follows:

The proposed substation compound is subdivided into two parts. The western part of the compound will accommodate a two storey 110kV GIS substation building (with a gross floor area of c. 1,447 sq.m). The eastern part of the compound will accommodate four transformers and a single storey client control building (with a gross floor area of c. 423 sq.m) and associated underground services. Both parts of the substation compound are enclosed within 2.6 metre high security fencing.

The proposed dropdown 110kV transmission lines will connect the proposed 110kV GIS substation building to existing 110kV overhead transmission lines traversing the subject site to the west of the proposed substation and will comprise the provision of two dropdown masts (c. 16 meters in height) and associated overhead transmission lines, transitioning to underground transmission lines set within ducts that will subsequently progress into the 110kV GIS Substation building, which will in turn connect to the four transformers.

The development includes access paths, landscaping, security fencing, provision of internal access roads and car parking within the GIS substation compound, provision of a 49kVa electricity connection (c. 544 metres in length, connecting to existing electrical services in the main avenue of the Drogheda IDA Business and Technology Park) for the GIS substation building, a unit substation, lightning masts, services, all associated construction works, and all ancillary works.

Figure 1 shows the Proposed Development location and Figure 2 shows a detailed view of the Proposed Development boundary on recent aerial photography. Figure 3a shows the Proposed Development in the context of Permitted Development (described in Chapter 2 of this EIA Report) and Figure 3b shows a detailed site plan.

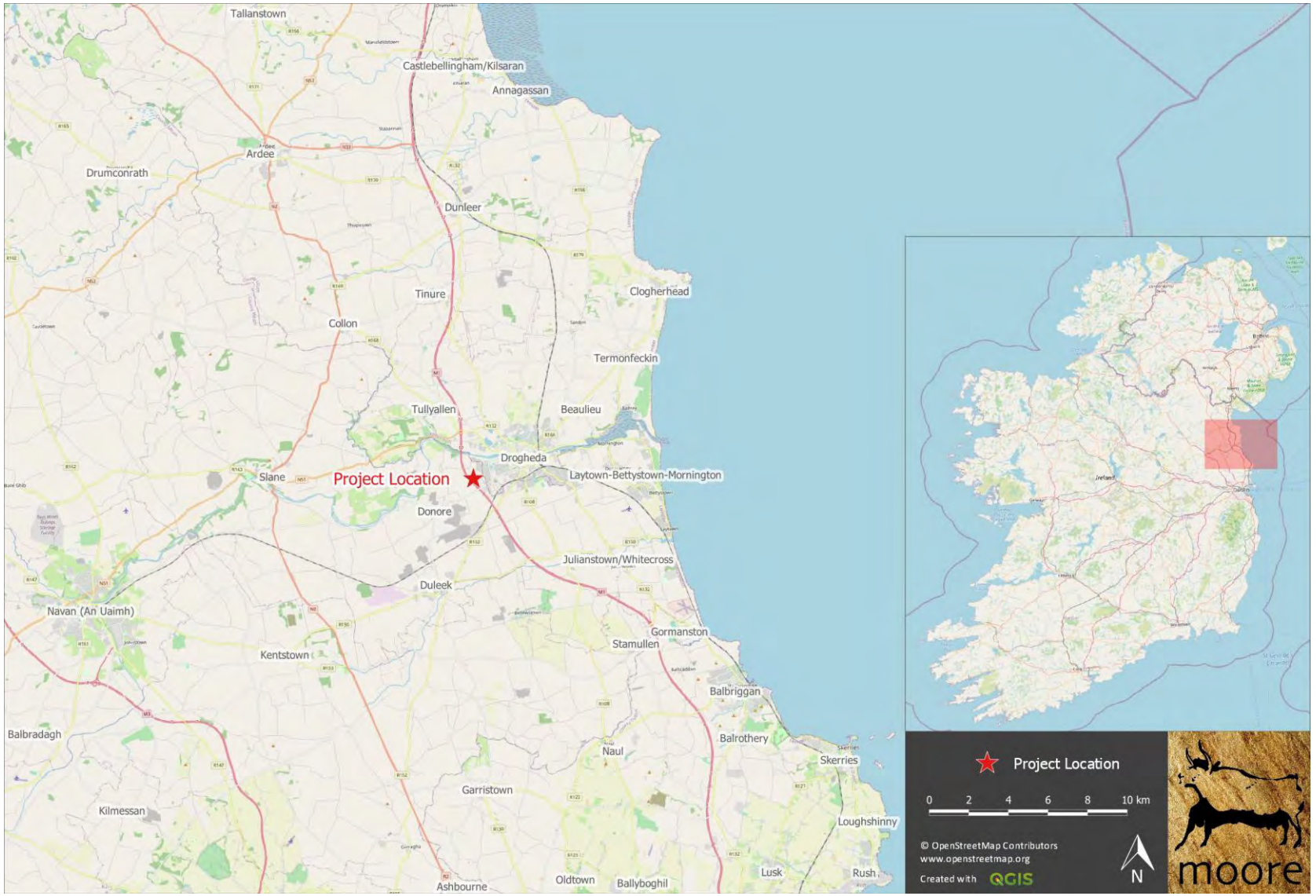

Figure 1. Showing the Proposed Development location to the west of Drogheda.

Figure 2. Showing the Proposed Development boundary on aerial photography.

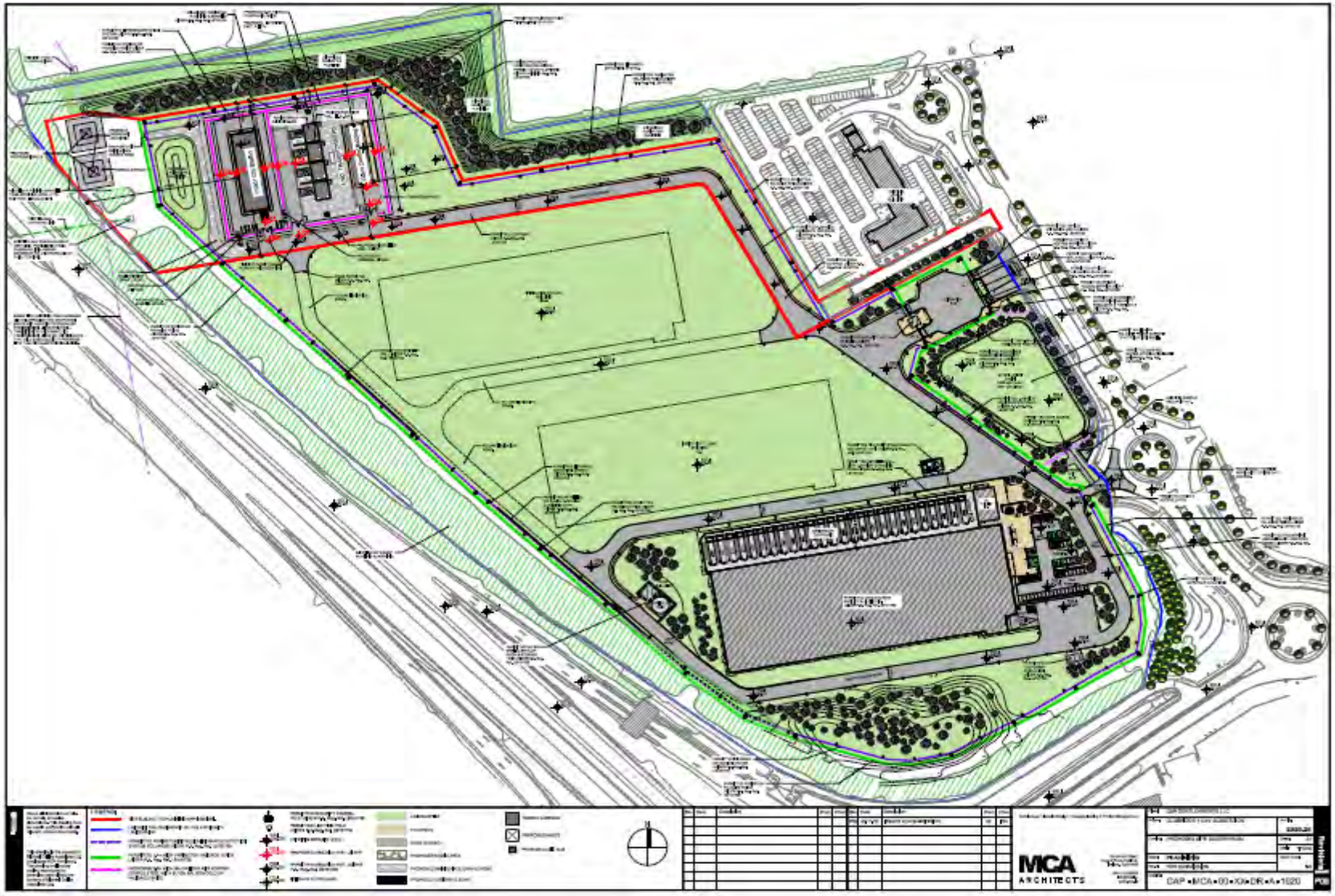

Figure 3a. Plan of the Proposed Development (outlined in red) in the context of the Permitted Development and indicative Masterplan for the Data Storage Facility.

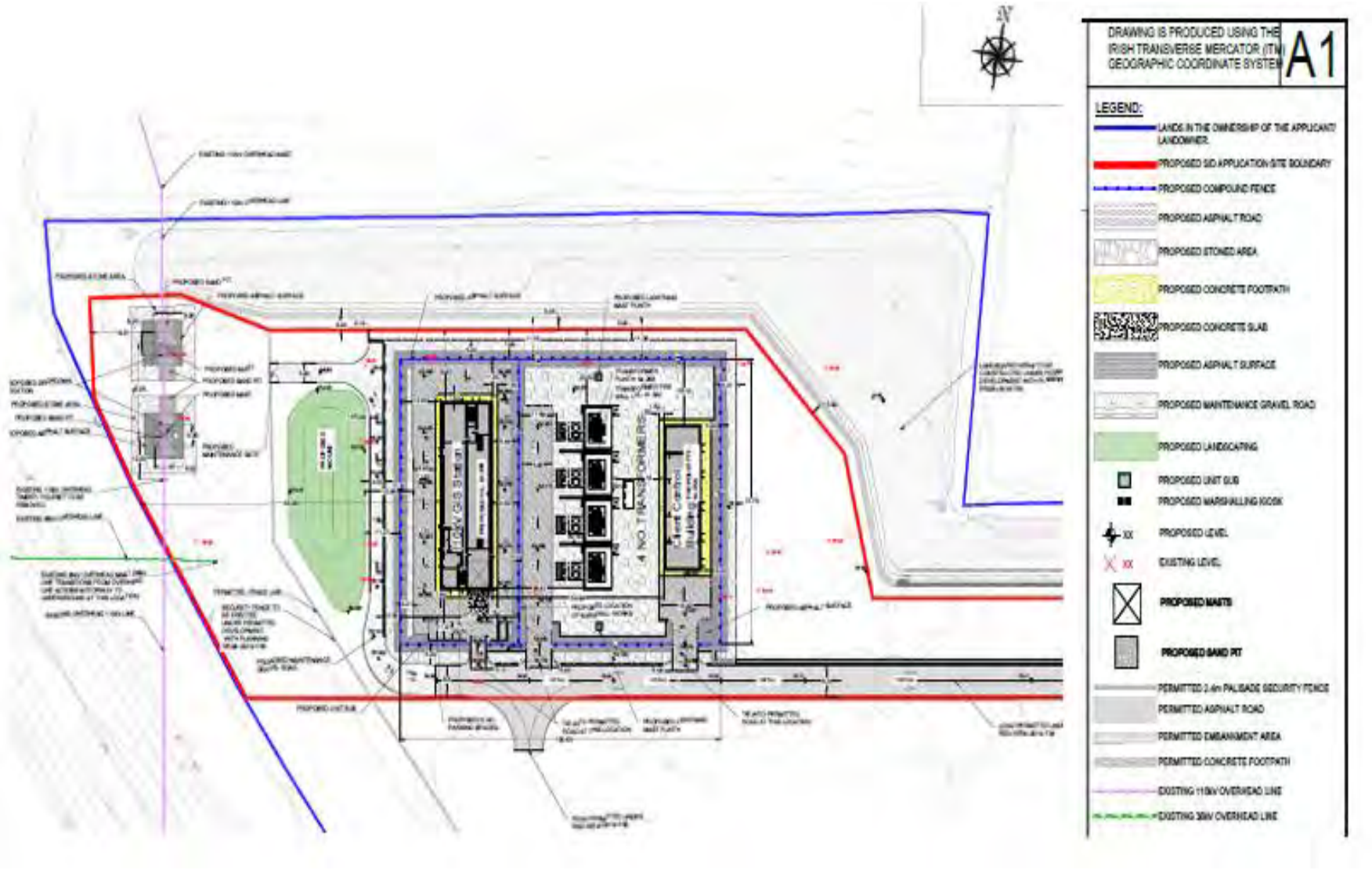

Figure 4b. Plan of the Proposed Development in detail.

4. Identification of Natura 2000 Sites

4.1. Description of Natura Sites Potentially Affected

Department of Environment, Heritage and Local Government (2009) Guidance on Appropriate Assessment recommends an assessment of European sites within a zone of impact of 15 km. This distance is a guidance only and the zone of impact has been identified taking consideration of the nature and location of the Proposed Development to ensure all European sites with connectivity to it are considered in terms of a catchment-based assessment.

The zone of impact may be determined by connectivity to the Proposed Development in terms of:

- Nature, scale, timing and duration of works and possible impacts, nature and size of excavations, storage of materials, flat/sloping sites;
- Distance and nature of pathways (dilution and dispersion; intervening 'buffer' lands, roads etc.); and
- Sensitivity and location of ecological features.

The potential for source pathway receptor connectivity is firstly identified and detailed information is then provided on sites with connectivity. European sites that are located within 15 km of the Proposed Development are listed in Table 1 and presented in Figures 4 and 5, below. Spatial boundary data on the Natura 2000 network was extracted from the NPWS website (www.npws.ie) on the 25 August 2020.

Table 1 European Sites located within 15km or the potential zone of impact[1] of the Proposed Development.

Site Code	Site name	Distance (km)[2]
001459	Clogher Head SAC	13.35
001957	Boyne Coast and Estuary SAC	5.18
002299	River Boyne and River Blackwater SAC	1.01
004080	Boyne Estuary SPA	3.98
004158	River Nanny Estuary and Shore SPA	8.38
004232	River Boyne and River Blackwater SPA	1.30

The nearest European sites to the Proposed Development are associated with the River Boyne and include the River Boyne and River Blackwater SAC (Site Code 002299), which is located just over 1km to the north, and the River Boyne and River Blackwater SPA (Site Code 004232), which is located approximately 1.3 km to the north.

The Proposed Development is located within the catchment of River Boyne, approximately 1 km to the south of the River and on the outskirts of Drogheda town. Immediately to the west of the Proposed Development

[1] All European sites potentially connected irrespective of the nature or scale of the Proposed Development.
[2] Distances indicated are the closest geographical distance between the Proposed Development and the European site boundary, as made available by the NPWS. Connectivity along hydrological pathways may be significantly greater.

site is the M1 Motorway. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no watercourses in the vicinity of the Proposed Development site. This was confirmed during fieldwork on habitat assessment on 5 February and 17 April 2019 and 3 September 2020.

Downstream, the waters of the River Boyne enter the River Boyne Estuary with its European sites, the Boyne Coast and Estuary SAC (Site Code 001957) and the Boyne Estuary SPA (Site Code 004080), which are located respectively approximately 5.1km and c. 4km to the northeast of the Proposed Development.

It can be noted that the level of development recorded during fieldwork and distance from the coastal SPAs do not present opportunities to support the bird species (predominantly waders) for which the Boyne Estuary SPA (c. 4km) and River Nanny Estuary and Shore SPA (8.4km) are designated.

There is no connectivity to the River Boyne or to any other European sites within or outside the guideline 15 km zone of potential impact. Therefore, there are no predicted effects on any European sites.

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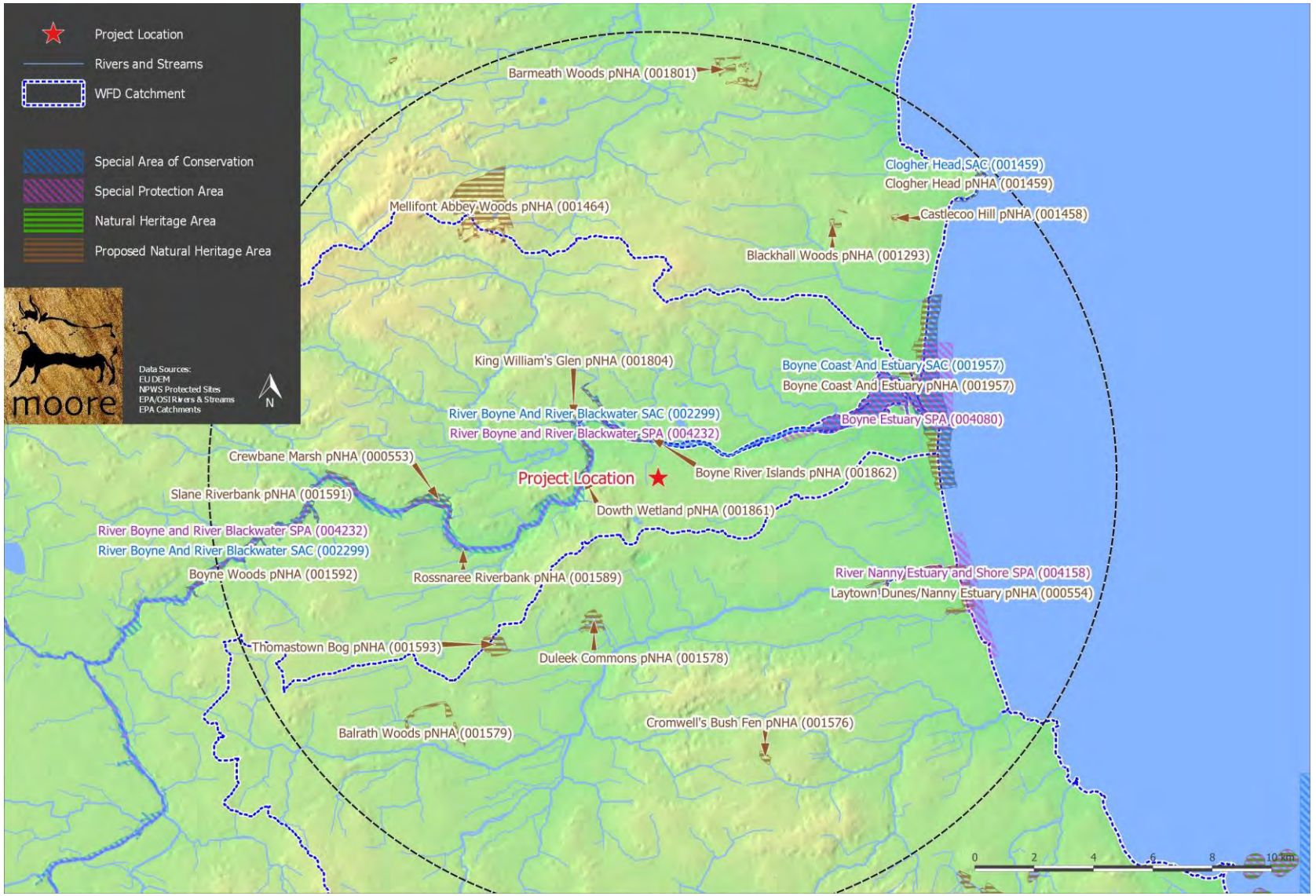

Figure 5. Showing European sites and NHAs/pNHAs within 15 km of the Proposed Development.

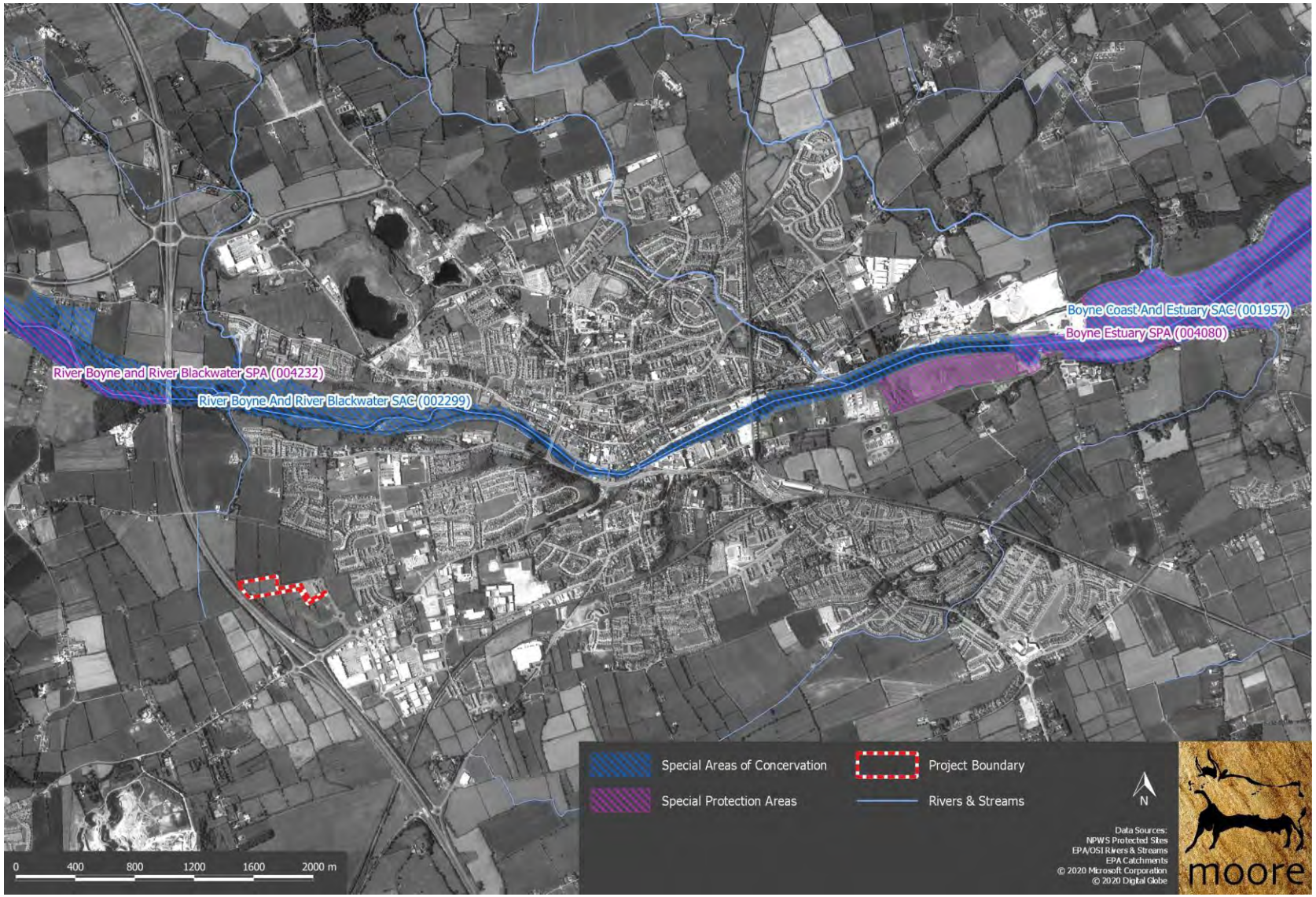

Figure 6. Detail view of European sites within 15 km of the Proposed Development.

4.2. Ecological Network Supporting Natura 2000 Sites

An analysis of the proposed Natural Heritage Areas (pNHA) and designated Natural Heritage Areas (NHA) in terms of their role in supporting the species using Natura 2000 sites was undertaken. It was assumed that these supporting roles mainly related to mobile fauna such as mammals and birds which may use pNHAs and NHAs as "stepping stones" between Natura 2000 sites.

Article 10 of the Habitats Directive and the Habitats Regulations 2011 place a high degree of importance on such non-Natura 2000 areas as features that connect the Natura 2000 network. Features such as ponds, woodlands and important hedgerows were taken into account during the preparation of this AA Screening report .

The NHas and pNHAs identified in Figure 4 are either associated with the River Boyne or located in outside the zone of impacts. It has been established that there is no connectivity to the River Boyne. Therefore, there are no areas of supporting habitat that will be affected by the Proposed Development.

5. Identification of Potential Impacts & Assessment of Significance

The Proposed Development is not directly connected with or necessary to the management of the sites considered in the assessment and therefore potential impacts must be identified and considered.

5.1. Potential Impacts

The Proposed Development is located within the catchment of River Boyne, approximately 1 km to the south of the River and on the outskirts of Drogheda town. Immediately to the west of the Proposed Development site is the M1 Motorway. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no watercourses in the vicinity of the Proposed Development site. This was confirmed during fieldwork on habitat assessment on 5 February and 17 April 2019 and 3 September 2020.

There is no connectivity to the River Boyne or to any other European sites within or outside the guideline 15 km zone of potential impact.

There will be no direct or indirect impacts from construction activity or from the operation of the Proposed Development on the River Boyne and therefore on any European sites associated with the River Boyne.

There are no predicted effects on any European sites given:

- The distance between the Proposed Development and any European Sites, approximately 1km;

- The lack of connectivity between the Proposed Development and any hydrological pathways; there are no watercourses within the Proposed Development boundary and there is no connectivity between the Proposed Development site and any watercourses that lead to the Boyne River;
- The Proposed Development is to be connected to the existing public sewer network for the treatment of wastewater.

- There are no predicted emissions to air, water or the environment during the construction or operational phases that would result in significant effects.

5.2. Assessment of Potential In-Combination Effects

In-combination effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

As part of the Screening for an Appropriate Assessment, in addition to the Proposed Development, other relevant plans and projects in the area must also be considered at this stage. This step aims to identify at this early stage any possible significant in-combination effects of the Proposed Development with other such plans and projects on European sites.

The Proposed Development, the Permitted Development and indicative future Masterplan for the site are considered together. The construction works for the Proposed Development will take place during the construction programme for the permitted development. However, these projects do not have connectivity to the River Boyne or to its associate European Sites and so in-combination effects can be ruled out.

The planning sections of the Meath and Louth County Council's websites were consulted on 28/08/20, and Tables 2 and 3 presents a list of applications that were granted permission in the vicinity of the Proposed Development within the past five years.

Table 2. Recent planning applications to MCC in the locality of the Proposed Development site.

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
FS16098 Costa Coffee, C/o Mr Sekar	Works to include the installation of new mezzanine floor, the installation of new emergency & general lighting, alterations to existing fire alarm, laying of floor finishes, erection of internal stud wall partitions, installation of prefabricated prefabricated feature joinery items such as balustrades,	Costa Coffee Drogheda Retail Park Donore Road Drogheda, Co Meath	GRANT PERMISSION 17/10/2016

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
Natarajan,	coffee counter etc, internal decoration & installation of fixed & loose furniture and the refurbishment of the existing WC		
FS19155 Glenveagh Homes Ltd	Construction of new pre-school (Creche) within the Proposed Development at Rathmullen Road, Drogheda, Co Meath	Rathmullen Road, Drogheda, Co Meath	GRANT PERMISSION 03/10/2019
LB170240 MBCC Foods T/A Costa Coffee	The installation of a new mezzanine floor with an area of 54m^2 at 2.9 metres from ground floor level and a new emergency escape door on the north elevation.	Costa Coffee Unit, Drogheda Retail Park, Donore Road, Drogheda, County Meath	GRANT PERMISSION 25/07/2017
LB170675 Gallow Ash Limited	Demolition of an existing agricultural shed and the construction of 156 no. dwellinghouses, creche and all associated ancillary development works including access, parking, footpaths, lighting, foul and surface/storm water drainage, landscaping and amenity areas.	Rathmullan Road Drogheda Co. Meath	GRANT PERMISSION 15/06/2018
LB181492 Targeted Investment Opportunities ICAV	The construction of an extension to this retail warehouse unit comprising a stock room and an outdoor display area, internal modifications and fit-out, associated elevational changes including new fire exits, signage and all associated site works neccessary to facilitate the development	Unit 1A, Drogheda Retail Park Donore Road Drogheda, Co. Meath	GRANT PERMISSION 13/02/2019
SH305552 PL17.305552 Trailford Ltd	(i) demolition of existing farm buildings/structures (1160sqm) on site; (ii) construction of 661 no. residential dwellings and a neighbourhood centre adjacent to the site's eastern boundary, consisting of a childcare facility (486sqm), café (63sqm) and retail unit (318sqm); (iii) a 4-arm signalised junction and works to Rathmullan Road, including the widening of the existing carriageway to 6 metres and the provision of a 2 metre wide footpath linking the Proposed Development to the River Boyne Boardwalk; (iv) 2 no. priority junctions (one along the site's eastern boundary to provide access to the neighbourhood centre and one along the site's southern boundary to provide a second	Rathmullan Road Rathmullan Drogheda, Co. Meath	DECISION DUE 27/11/2019

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	access to the development), realignment and upgrade works to the un-named local road along the site frontage to the south of the new signalised junction with Rathmullan Road; (v) Construction of a strategic foul water pumping station in the north-eastern corner of the site; and (vi) all associated site, landscaping and infrastructural works, including foul and surface water drainage, attenuation areas, open space areas, boundary walls and fences, internal roads and cycle paths and footpaths. The 661 no. residential dwellings consist of the following: • 509 no. double storey semi-detached and terraced houses comprising 158 no. 2-bed houses, 269 no. 3-bed houses and 82 no. 4-bed houses; and • 152 no. apartments (in Blocks B1, B2, B3, C, D, E & G which vary from 3 to 5 storeys in height) comprising 13 no. 1-bed apartments and 139 no. 2-bed apartments. A total of 1,366 no. car parking spaces are proposed, including 1018 no. spaces (2 no. on curtilage spaces per dwelling) serving the proposed dwellings, 195 no. spaces serving the proposed apartments; 111 no. spaces serving visitors to the development; and 42 no. spaces serving the proposed neighbourhood centre. A total of 188 no. bicycle parking spaces are proposed, including 154 no. spaces serving the proposed apartments and 34 no. spaces serving the proposed neighbourhood centre. The development also features 9.15 hectares of public open space, including landscaped play spaces and pocket parks throughout the development and 6.13 hectares of landscaped open space provided adjacent to the Boyne River and M1 motorway frontages. This application is accompanied by an Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS).		
FS17170 Melanie Bell	75.9 m2 side extension consisting of a single open plan classroom	Scribbles & Giggles Pre-School Day Centre Knightswood, Matthews Lane Platin Road, Lagavoreen Drogheda, Co Meath	GRANT PERMISSION 13/03/2018

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB141095 Tony Cromwell	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/901402 - demolition of the existing dwelling and associated out buildings, provision of new site access from Lagavooren Manor, construction of 7 new dwelling houses including drainage connection, car parking and all associated sit works	Beamore Road, Lagavooren, Drogheda, Co. Meath	GRANT PERMISSION 06/02/2015
LB141166 Rockview Development Ltd	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/900997 - Revisions to previously approved mixed use development Reg Ref SA60309. The development will consist of a 2 & 3 storey mixed use development comprising 2996sqm leisure centre, 1694.5sqm of retail space including an off lience, 389sqm medical centre, 707sqm creche with 120sqm outdoor play area, underground car park with 90 spaces, surface car park with 122 spaces, internal ancillary areas including circulation, plant rooms along with all external ancillary site development works including landscaing & boundary treatments & the omission of 4 no. previously approved type F housing blocks comprising 6 no. ground floor residential units & 6 no.. first/second floor duplex residential units	Avourwen Village & The Medows Plattin Road Duleek, Drogheda, Co. Meath	GRANT PERMISSION 24/02/2015
LB141185 Joe Murphy Developments	Change of house type from 14 No. two storey town houses types A B & C permitted as units 1-14 in planning permission SA/70537 extended under permission SA/121086 to 2 No. two storey three bedroom detached house type H and 10 No. two storey three bedroom semi detached houses type J and associated site works	Knightswood, Matthew Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 25/03/2015
SA120901 DDF Partnership	change of use of the previously permitted motor sales outlet (1680sqm) to medical clinic use at ground and first floor levels including ancillary staff, patient and administration areas. The development will also consist of minor elevational amendments including the provision of new glazing and cladding to existing opes and a new canopy to existing pedestrian door on the south east elevation and a new canopy to existing pedestrian door on the south west elevation and provision of 4 no. additional parking spaces adjacent to the east and south of the building. (The development will be served by permitted existing surface car parking provision.)	Unit 10 Drogheda Retail Park, Donore Road, Rathmullen, Co Meath	GRANT PERMISSION 11/02/2012

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB171481 Fergus & Shane Neilon	EXTENSION OF DURATION OF PLANNING PERMISSION No SA/120081 - Two no. additional four bedroom, two storey semi-detached dwellinghouses (Circa 112m2 each) with associated siteworks, drainage and parking measures	No. 31, The Lawns, Highlands, Rathmullen Road, Drogheda, Co. Meath	GRANT PERMISSION 20/12/2017
LB190093 Ravala Ltd	alterations to dwellings on site numbers 138-142 (5no. dwellings) as granted under planning under planning ref: LB160450 to now include 7no. 2-bedroom Disability/Retirement bungalows, with all associated landscaping, site development and civil works. This equates to 2 additional dwellings	Knightswood, Matthews Lane, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 01/02/2019
SA121086 Martin Dunne (per Martin Ferris Receiver)	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/70537 - 172 unit residential development	Mathews Lane, Platin Road, Lagavoureen, Drogheda Co Meath	GRANT PERMISSION 20/12/2012
LB151408 J Murphy Developments Ltd	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no. type H (2 storey 3 bed semi detached town houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185		
LB170414 Scribbles & Giggles Creche	the development will consist of a single storey one classroom side extension and all associated site works	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 19/04/2017
LB171546 J Murphy Developments Ltd	EXTENSION OF DURATION OF PLANNING PERMISSION LB160450 - Development will consist of change from 94no. mixed house types and duplex apartments on site numbers (79-172) as granted under planning ref: SA60423, SA70537 & SA121086 to 30no. Type H (3-bed semi-detached), 3no. Type G (3-bed detached), 18no. Type J (3-bed end of terrace) & 12no. Type K (2-bed mid terrace) all on site number 86-148. This represents a decrease of 24 units. The development will also consist of change of house Type G (3-bed detached) on site number 55 as granted under planning ref: LB151408 to 2no. Type H (3-bed semi-detached) with all associated site & civil works. This represents an increase of 1 unit.	Knightswood, Matthews Lane, Drogheda, Co. Meath	GRANT PERMISSION 29/12/2017
LB160450 J Murphy Development Limited	development will consist of change from 94no. mixed house types and duplex apartments on site numbers (79-172) as granted under planning ref: SA60423, SA70537 & SA121086 to 30no. Type H (3-bed	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 10/05/2016

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	semi-detached), 3no. Type G (3-bed detached), 18no. Type J (3-bed end of terrace) & 12no. Type K (2-bed mid terrace) all on site number 86-148. This represents a decrease of 24 units. The development will also consist of change of house Type G (3-bed detached) on site number 55 as granted under planning ref: LB151408 to 2no. Type H (3-bed semi-detached) with all associated site & civil works. This represents an increase of 1 unit. Significant further information/revised plans submitted on this application		
LB190254 Ruth & Andy Kiernan	*demolition of an existing utility room to side of the existing dwelling, * removal and replacement of roofs to existing dwelling, * construction of 2 no. new single storey extensions to the rear of the existing dwelling, including a 2 bedroom assisted-living family flat, * construction of a first floor extension over existing single storey section of dwelling, * construction of a new detached garage to the side of the existing dwelling, * alterations and improvements to the existing site entrance, * decommissioning of existing septic tank & provision of new proprietary wastewater treatment system & percolation area * and all associated site works. Significant further information/revised plans submitted on this application	Donore Road, Drogheda, Co. Meath	GRANT PERMISSION 08/03/2019
LB141038	change of use of former car showroom and maintenance workshop to new distillery, brewery and visitors centre, with associated new buildings including warehouse and site	Bryanstown,, Duleek, Co. Meath	GRANT PERMISSION

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
Harvest Distilling & Brewing Ltd.,	development works. The development shall consist of new distillery, brewery together with canning and bottling lines, whiskey filling area, barrell storage, associated offices, laboratory, restaurant, retail area, tasting rooms, kitchen, including preparation and servery area, associated stores and offices all within existing buildings. Permission sought for visitors centre incorporating new entrance foyer with function room at first floor level, roof garden at second floor level, new service building with plant rooms and amenity facilities, external tanks and silos, new warehouse with offices over three floors, machinery building, site development works, including car-parking, disabled car parking, car parking for electrical re-charging of eco cars, bus parking, cycle parking, new vehicular service entrance, storm water attenuation and harvesting systems, foul sewer pumping station with rising main to existing manhole located at entrance to Knights Wood residential development, at access off Matthews Lane		20/11/2014
LB160011 Harvest Distilling & Brewing Ltd.	land permission for retention of developments. The development consists of A. Change in layout of whiskey storage area granted planning permission under planning reference LB141038, to incorporate new keg filling area, cider process area including external tank, mezzanine area and covering of existing ramp to basement. B. New fire water storage tank with pump house and associated site development works. C. Retention permission of ESB sub-station,	Bryanstown, Platin Road, Drogheda, Co. Meath	GRANT PERMISSION 12/01/2016

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	with adjoining switch room and pump house		
LB141022 Laurence Cassidy	the development will consist of the following, the change of use of existing house from commercial 6 bedroom non residential bed and breakfast to residential dwelling house	Platin Lower, Duleek, Drogheda, Co. Meath	GRANT PERMISSION 14/11/2014
SA120881 Danielius Stankevicius	1. retention and completion of a new 3 bedroom storey-and-half replacement dwelling, 2. retention and completion of existing garage, 3. proposed relocation and improvement of existing vehicular entrance, 4. proposed proprietary waste water treatment system and percolation area, 5. all associated site works	Drogheda Road, Donore, Co Meath	GRANT PERMISSION 08/10/2012
SA100051 James Gogarty	alterations to front, side & rear elevations of existing building, (2) a two storey extension to front elevation, (3) a single storey extension to the side & rear elevations, (4)the construction of a new side entrance attached to the west side of the dwelling, (5) the construction of a small green house located to the rear of the site & (6) all associated site development works connected with the development	Dunamaise House, Donore Road, Donore, Drogheda Co Meath	GRANT PERMISSION 27/01/2010
SA110353 Drogheda Town Football Club	2 No. Football pitches, carparking, 2 No. Temporary storage containers and all associated site works.	Platin Road, Lagavoreen, Co. Meath	GRANT PERMISSION 18/04/2011

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
SA110622 Mark & Tanya Curry	a proposed two storey extension to the side, including a single storey extension to the rear of the existing dwelling house and all associated site works	No. 6 The Crescent, Highlands, Rathmullan, Drogheda, Co Meath	GRANT PERMISSION 27/06/2011
LB180873 Michael & Lynn McGovern	retention of existing single storey extension to rear and side of existing two-storey dwelling and proposed first floor extension to side of existing two-storey dwelling	No. 13, The Court, Highlands, Rathmullan, Drogheda, Co. Meath	GRANT PERMISSION 07/08/2018
LB140854 Lyndsey McHugh and Rodney Everitt	the development will consist of new two storey extension to side and rear of existing dwelling and new single storey sunroom extension to rear of existing dwelling along with all associated site works	17 The Green, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 26/09/2014
LB160950 Donal & Tara Murphy	development will consist of the construction of a new first floor extension over existing single storey part to side of dwelling and a new single storey extension to rear of existing dwelling, together with all associated site works	16 The Avenue, Highlands,Drogheda, Co. Meath	GRANT PERMISSION 31/08/2016
LB140854 Lyndsey	the development will consist of new two storey extension to side and rear of existing	17 The Green, Highlands, Drogheda,	GRANT PERMISSION

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
McHugh and Rodney Everitt	dwelling and new single storey sunroom extension to rear of existing dwelling along with all associated site works	Co. Meath	26/09/2014
LB190177 Ian & Mary Barrett	the construction of a new single-storey extension to the side and rear of existing dwelling, together with all associated site works	3 The Lawn, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 21/02/2019
LB160950 Donal & Tara Murphy	development will consist of the construction of a new first floor extension over existing single storey part to side of dwelling and a new single storey extension to rear of existing dwelling, together with all associated site works	16 The Avenue, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 31/08/2016
LB181033 Joseph & Denise Connor	proposed two storey/single storey rear extension to existing two story dwelling and all associated works	25 The Drive, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 07/09/2018
SA140457 Robert Byrne	first floor side extension to existing dwelling and all associated site works	53 The Drive, Highlands, Rathmullen Road, Drogheda, Co. Meath	GRANT PERMISSION 29/05/2014
LB171168	the development will consist of the following: (a) construction of a first floor extension over single storey part to side of existing dwelling (b) construction of a single	50 The Drive, Highlands, Drogheda, Co. Meath	GRANT PERMISSION

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
Barry Whelan	storey extension to rear of existing dwelling (c) construction of a bay window to front of existing dwelling (d) all associated site works		06/10/2017
SA110864 Kevin O'Brien	1. Permission to construct a single storey extension to rear of dwelling with all ancillary site works and 2. Permission for retention of domestic store/garage, upgraded Puraflo wastewater treatment system with polishing filter, revised site layout and alteration to single storey extension to side of dwelling from plans previously submitted under SA/70395	Newtown, Platin , Drogheda, Co Meath	GRANT PERMISSION 15/09/2011
LB150245 Siobhan & John Conway	development consists of modifications and alterations to the existing dwelling and a new single storey extension to the side and rear, including upgrading the existing septic tank to a new wastewater treatment system and percolation area and all associated site works.	Newtown Platin, Donore, Co. Meath	GRANT PERMISSION 12/03/2015
SA100452 Deirdre Bidwell	construction of a single story extension to the south facing elevation of the existing dwelling, comprising of a sunroom and all associated site works.	Newtown Platin, Donore Co Meath	GRANT PERMISSION 06/05/2010
LB151408	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
J Murphy Developments Ltd	SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no. type H (2 storey 3 bed semi detached town houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185		
LB190093 Ravala Ltd	alterations to dwellings on site numbers 138-142 (5no. dwellings) as granted under planning under planning ref: LB160450 to now include 7no. 2-bedroom Disability/Retirement bungalows, with all associated landscaping, site development and civil works. This equates to 2 additional dwellings	Knightswood, Matthews Lane, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 01/02/2019
LB141185 Joe Murphy	change of house type from 14 No. two storey town houses types A B & C permitted as units 1-14 in planning permission SA/70537 extended under permission SA/121086 to 2 No. two storey three bedroom detached	Knightswood, Matthew Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 31/12/2014

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
Developments,	house type H and 10 No. two storey three bedroom semi detached houses type J and associated site works		

Table 3. Recent planning applications to LCC in the locality of the Proposed Development site.

Louth County Council Planning Application Reference No. & Applicant	**Summary Description of Development**	**Location of Development**	**Outcome & Final Grant Date**
13510015 Seamus Domegan	Extension of Duration of Planning Permission 08/170 which consists of Permission for four-storey office building with rooftop plant room (total floor area 4531sq.m.) accommodating 8 no. office units ranging in size from 200sq.m to 696sq.m. Development includes 88 no. surface car parking spaces, bicycle parking, a 22.8sq.m. ESB substation, refuse store, landscaping, boundary treatment, services, illuminated building signage & ancillary site works. Development also includes a 7.0m high by 2.2m wide free-standing double sided monolith advertising sign with up-light illumination.	Matthews Lane, Donore Industrial Estate Road, Drogheda, County Louth	GRANT PERMISSION 27/02/2013
11510022 Lorraine Prendergast	Single storey pitched roof extension to side comprising a Kitchen & Shower Room, also an Attic Study with Rooflights.	11 Knockbrack Close, Drogheda, Co. Louth.	GRANT PERMISSION 21/03/2011

14510014 Keith Smyth	Permission for construction of 2 storey extension to side of existing dwelling house over existing ground floor, new bay window and porch along with all associated site works	26 Knockbrack Close, Matthews Lane, Drogheda, County Louth	GRANT PERMISSION 18/02/2014
17918 McBreen Environmental	Permission to erect a fully serviced two storey office building with attached workshop / maintenance building, form hardstanding yard for vehicle parking, truck wash facilities for private use, erect perimeter fencing, install pumping station, connection to existing services and all ancillary and associated works.	East Coast Business Park, Matthews Lane, Donore Road, Drogheda	GRANT PERMISSION 11/12/2017
10510103 Co. Louth V.E.C.	Extension & alterations to existing school buildings to include 6 no. CLASSROOMS together with ancillary accommodation, along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda.	GRANT PERMISSION 01/10/2010
10510034 County Louth V.E.C.,	Six no. temporary CLASSROOMS along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda	GRANT PERMISSION 30/03/2010
14510021	Permission for a single storied extension and alterations to the existing school buiding in two separate locations to include a new	St Oliver's Community College, Rathmullan	GRANT PERMISSION

Board of Management St Oliver's Community College	entrance, 10 no. classrooms and offices together with ancillary accommodation and associated site works	Road, Drogheda, County Louth	07/03/2014
15675 Louth & Meath Education & Training Board (LMETB)	Permission for Proposed Development will consist of a new two-storey administrative headquarters building. The building will be exclusively occupied by the applicant (LMETB) for the purposes of administering educational & training services in the Louth & Meath areas. The Proposed Development also provides for 57 no surface car parking spaces, cycle parking, landscaping and boundary treatment, signage and all associated site development works. Vehicular access to the Proposed Development is provided via a new access off Marley's Lane.	Marley's Lane / Rathmullen Road, Drogheda, County Louth	GRANT PERMISSION 12/10/2015
10510103 Co. Louth V.E.C.	Extension & alterations to existing school buildings to include 6 no. CLASSROOMS together with ancillary accommodation, along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda.	GRANT PERMISSION 01/10/2010
14574 Respond Housing Association	Permission for a single storey extension to the existing bungalow and site development works to provide for a new private disabled carparking space, which includes new vehicular access, boundary modifications and relocation of 3 existing carparking spaces to existing public green.	77 Tredagh View, Marleys Lane, Drogheda, Co Louth	GRANT PERMISSION 12/12/2014

19237 Ian Farrell & Nicola Farrelly	Permission to construct a single storey 24m2 extension to the east of the dwelling, to demolish a section of the existing dining room wall and to create a 1550mm opening into the proposed 20m2 family room with a 4m2 WC and utility room.	37 Marley Court, Drogheda, Co Louth	GRANT PERMISSION 29/03/2019
18292 Gary & Eavan Doyle	Permission requested for new two-storey extension to eastern side of existing two-storey dwelling house along with associated internal alterations and siteworks.	21 Cedarfield, Drogheda, Co. Louth	GRANT PERMISSION 20/04/2018
13510066 Berchmans Enterprises Limited	Permission for: (i) Timber shopfront to existing pub entrance to the south elevation (ii) covered enclosure to existing smoking area with slate covered projecting canopy structure including projecting canvas awnings and free standing wind breakers all to south west elevation (iii) Retention permission is sought for halo illuminated signage to the south west elevation, and associated site works. The Proposed Development is within the curtilage of a Protected Structure ***Grant Permission for (i) Timber shopfront to existing pub entrance to the south elevation (ii) covered enclosure to existing smoking area with slate covered projecting canopy structure including projecting canvas awnings and free standing wind breakers all to south west elevation subject to 4 conditions in Schedule 1*** To Grant Permission for (iii) Retention permission is sought for halo illuminated	The Thatch Public House, Donore Road, Drogheda, Co Louth	GRANT PERMISSION 20/09/2013

	signage to the south west elevation, and associated site works subject to the 2 conditions in Schedule 2**		
18786 Maxol Ltd	Permission is sought for the following: (i) A 182 sq.m. extension to the existing shop, deli and off licence, and the creation of a modernised shop, wine off license, deli and seating area, (ii) Extension of existing forecourt to provide designated parking, (iii) Minor realignment of existing access points, (iv) Ninetenn car parking spaces and new cycle parking stands, (v) Relocation of offset fill point and vent pipes, (v) Relocation of existing car wash, (vi) New corporate signage. The Proposed Development also includes all site develoment works including drainage and landscaping.	Maxol Service Station, Donore Road, Drogheda, Co Louth, A92HX9A	GRANT PERMISSION 28/09/2018
19724 Maxol Limited	Retention & Permission for development on a site of approximately 0.3549 hectares, which currently accommodates a Maxol Service Station, and unit 9 (a garden centre). The Proposed Development will consist of the demolition of Unit 9 (a two storey building, 462sqm) and removal of associated structures and the removal of part of the existing service station forecourt canopy; and the construction of single storey extension (275sqm) onto the existing single storey forecourt building (155sqm), resulting in a forecourt building of 430sqm. The resultant forecourt building will accommodate a 100 sqm shop (including a 9 sqm ancillary off-licence; 3 no. restaurant/café areas (which will include for the sale of hot and cold food for consumption on and off the premises) (one of which will include a drive-thru facility); associated restaurant/café seating areas; ancillary kitchens, staff and customer facilities, plant, storage, back of house and	Maxol Service Station, Donore Road, Drogheda, Co Louth	GRANT PERMISSION 06/09/2019

	circulation spaces. The development will also consist of elevational changes to the existing building; signage (replacement of a 6.5m high double sided internally illuminated totem sign, new shopfront signage, some internally illuminated, and signage associated with the car wash); external lighting; revisions to the site layout (the provision of 43 no. car parking spaces, bicycle parking spaces, waste and plant storage area; new replacement car wash, vent pipes, offset fill point and air/water services point); changes to levels; hard and soft landscaping, including revised boundary treatments and an external public seating area; associated site servicing (water supply, foul and surface water drainage including surface water attenuation measures); all other associated site development works above and below ground; realignment of the existing vehicular access points at Donore Road; and closure of the existing vehicular access to the garden centre site. Retention permission is sought for development consisting of a parcel collection kiosk.		
18674 Energy Efficient Homes Ltd.	The development will consist of the following: 1. Retention of change of use of unit 2. Retention of the subdivision of existing commercial unit along with internal alterations 3. Retention of alterations to existing east elevation which include 2no. doors and 1no. window 4. Retention of existing signage 5. Proposed alterations to existing elevations which include 1no. new door on the east elevation, and 1no. window to be removed and 5no. new windows to the west elevation.	Unit 1 A, Block 2, Drogheda Industrial Park, Donore Road, Drogheda Co Louth	GRANT PERMISSION 24/08/2018
	Permission for the development that consists of the retention of offices at ground and first	Unit 1b, Block 2, Drogheda Industrial	GRANT PERMISSION

17672 Mardam Ltd	floor level, and retention of a mezzanine floor and the Proposed Development will consist of completion of the retention works, a personnel door in the rear façade of the building, internal alterations and for associated site works.	Estate, Donore Road, Drogheda, Co. Louth	11/09/2017
18320 Joe Duffy Property Company Limited	Permission for an extension at (Former Tom Fox) car showroom site. The development consists of extensions to the south and east elevations to form additional workshop area and car valeting/wash facilites, (combined addition of 243.7m2 floor area), with associated internal reconfiguration. External customer parking layout and used display areas to be reconfigured. Elevations to receive new external cladding, and corporate signage consisting; 1 brand pylon, 1 directional pylon and 4 fascia signs.	Former Tom Fox Car Showroom site, New Grange Business Park, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 27/04/2018
16922 Renata Jakutiene	Retention Permission for development consisting of change of use of existing mixed retail and onsite learning activity and development centre use from previously granted retail werehousing granted under register reference 04197. Retention is also sought for existing signage located on external wall of building.	Unit 2a, Drogheda Industrial Park, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 20/12/2016
15615 Gary Kelly	Retention Planning Permission for retention of the first floor constructed in the existing unit and for permission for a change of use from light industrial/retail use to a fitness centre at ground level.	Unit 11B, Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 17/09/2015
	Retention permission for a change of use	Unit 11A Newgrange	GRANT PERMISSION

16239 Ian Madden	from a manufacturing/retail use to a taxi/cab operational facility also retention permission for the palisade fence along the south eastern boundary of the complex.	Business Park, Donore Road, Drogheda	15/04/2016
13510049 Pharaway Properties Limited	Permission for development will consist of the change of use of c.37m² of the existing bulk storage area to Class 1 retail sales area (non-food) & all associated site development works & site services with the Tesco Supermarket.	Matthews Lane, Rathmullan, Drogheda, County Louth	GRANT PERMISSION 11/07/2013
10510088 Blackstone Motors Ltd.,	Change of use of part of ground floor from industrial/warehouse/wholesale retail to Motor Vehicle Sales & will also include alterations to existing building facade, an extension of 194 sq.m. to west side of existing building, the erection of Advertising Flags, Totem Signs, Facade Mounted Signage, new paladin boundary fence along southern boundary & all ancillary site dev. works & services.	Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 27/08/2010
17719 Nature's Best	Permission to construct a single storey factory extension of 2,682 square meters to provide loading bay, cold storage, packaging room, production area, plant room and all associated site works.	Greenvale Park, Rathmullen , Matthews Lane, Drogheda, Co. Louth. A92FT59	GRANT PERMISSION 25/09/2017

Ltd			
17377 Lidl Ireland GmbH	Retention permission and completion of ongoing development consisting of amendments to planning permission reference 15/716 (relating to the construction of a new licenced discount foodstore). The Proposed Development comprises 1)The extension of site area to 1.18 hectares; 2) reconfirguration and extension of permitted car park to provide 181 no. parking spaces; 3) relocation of permitted pedestrian entrance on Donore Road; 4) Installation of plant/equipment to roof of delivery / loading bay; and 5) associated and ancillary revisions to permitted hard and soft landscaping and boudaries and boundary treatments, and all other associated and ancillary modifications to 15/716 above and below ground level.	Donore Road , Drogheda, Co Louth	
10510110 Lidl Ireland Gmbh	Single storey extension with a flat roof & located to the front of the existing store & will be finished with materials consistent with the existing store. The proposed dev. also comprises an enclosed plant area adjoining the proposed extension, internal modifications/connections to the existing store & all assoc. works. Relocate existing car parking spaces, connection to existing services on site with all ancillary site dev. works.	Donore Road, Drogheda	
11510042	EXTENSION OF DURATION ON PLANNING FILE 04/324 - DEMOLITION OF FACTORY BUILDINGS & CONSTRUCTION OF 6 NO.	FORMER TELLABS SITE, DONORE ROAD,	

DDF PARTNERSHIP	RETAIL WAREHOUSE UNITS	DROGHEDA	
19504 Gatevale Ltd. T/A John McCabe Nissan Drogheda	Permission for a new car showroom with attached ancillary vehicle maintenance unit, building signage, surface car parking area with lighting, totem signage poles, new boundary fence/walls, use of existing vehicle entrance onto Donore Industrial Estate road and all associated site/civil development works.	Donore Industrial Estate, Donore Road, Lagavoreen, Drogheda, Co Louth	
16508 Irish Breeze Limited	Permission for the following: 1. to erect 2no. (8.1m x 1.7m) external LED backlit signs to south and east facades of the building, 2. erection of a two storey 258m2 extension to the south facade of the building for water tank storage purposes and an engineer's workshop, and including all associated site development works required for the above works.	Matthew's Lane South, Donore Road Industrial Estate, Drogheda, Co. Louth	
16507 Irish Breeze	Retention permission for the following: 1. Upgrade of site boundary fencing to the east and south to 2.4m high to matching existing, 2. the installation of 2 no. 2.4m high sliding gates to front (east) and rear (south) entrances. 3. the construction of 1no. single storey external 73m2 structure, adjacent to the northern site boundary for storage of pallets only, 4. 1no. 129m2 concrete pad	Matthew's Lane South, Donore Road Industrial Estate, Drogheda, Co. Louth	

Limited	with associated retaining walls and water tanks, adjacent to southern boundary, 5. for a second loading dock to the east of the existing loading dock on the north facade, 6. a 40m2 fenced compound with concrete pad, for a chiller unit as part of an air conditioning system to the south east corner of the building, adjacent to the southern boundary & 7. two no. 1600mm x 400mm external signs, positioned either side of entrance on existing wing walls, and including all associated site development works.		

Significant effects can be excluded with the developments in Tables 2 and 3 given that it is predicted that the Proposed Development will have no effect on any European site.

The Meath and Louth County Development Plans and Local Area Plans in complying with the requirements of the Habitats Directive require that all Projects and Plans that could affect the Natura 2000 sites in the same zone of impact of the Proposed Development site would be initially screened for Appropriate Assessment. In this way, in-combination effects with Plans or Projects for the development area and surrounding townlands in which the development site is located, would be avoided.

Any new applications for the Proposed Development area will be assessed initially on a case by case basis by Meath or Louth County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

6. Conclusion

There is no connectivity to the River Boyne or to any other European sites within or outside the guideline 15 km zone of potential impact.

There are no predicted effects on any European sites given:

- The distance between the Proposed Development and any European Sites, approximately 1km;
- The lack of connectivity between the Proposed Development and any hydrological pathways; there are no watercourses within the Proposed Development boundary and there is no connectivity between the Proposed Development site and any watercourses that lead to the River Boyne;
- The Proposed Development is to be connected to the existing public sewer network for the treatment of wastewater.

- There are no predicted emissions to air, water or the environment during the construction or operational phases that would result in significant effects.

Having considered the above, significant effects on any European sites as a result of the Proposed Development have been ruled out and potential significant effects on European sites have been excluded at a preliminary screening stage.

It has been objectively concluded by Moore Group Environmental Services that:

1. The Proposed Development is not directly connected with, or necessary to the conservation management of the European sites considered in this assessment.
2. The Proposed Development is unlikely to either directly or indirectly significantly affect the Qualifying interests or Conservation Objectives of the European sites considered in this assessment.
3. The Proposed Development, alone or in combination with other projects, is not likely to have significant effects on the European sites considered in this assessment in view of their conservation objectives.
4. It is possible to conclude that significant effects can be excluded at the screening stage.

It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

It is the view of Moore Group Environmental Services that it is not necessary to undertake any further stage of the Appropriate Assessment process.

A finding of no significant effects report is presented in Appendix A in accordance with the EU Commission's methodological guidance (European Commission, 2002).

7. References

Department of the Environment, Heritage and Local Government (2010) Guidance on Appropriate Assessment of Plans and Projects in Ireland (as amended February 2010).

European Commission (2000) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

European Commission Environment DG (2002) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43EEC. European Commission, Brussels.

European Commission (2007) Guidance document on Article 6(4) of the 'Habitats Directive '92/43/EEC: Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interests, compensatory measures, overall coherence and opinion of the Commission. European Commission, Brussels.

European Commission (2018) Managing Natura 2000 sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

NPWS (2019) The Status of EU Protected Habitats and Species in Ireland. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin.

NPWS (2020) National Parks and Wildlife Service Metadata available online at https://www.npws.ie/maps-and-data

Appendix A

FINDING OF NO SIGNIFICANT EFFECTS REPORT

Finding no significant effects report matrix

Name of project or plan

Oldbridge Grid Connection SID

Name and location of the Natura 2000 site(s)

The nearest European sites to the Proposed Development are associated with the River Boyne and include the River Boyne and River Blackwater SAC (Site Code 002299), which is located just over 1km to the north, and the River Boyne and River Blackwater SPA (Site Code 004232), which is located approximately 1.3 km to the north.

The Proposed Development is located within the catchment of River Boyne, approximately 1 km to the south of the River and on the outskirts of Drogheda town. Immediately to the west of the Proposed Development site is the M1 Motorway. A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no watercourses in the vicinity of the Proposed Development site. This was confirmed during fieldwork on habitat assessment on 5 February and 17 April 2019 and 3 September 2020.

Downstream, the waters of the River Boyne enter the River Boyne Estuary with its European sites, the Boyne Coast and Estuary SAC (Site Code 001957) and the Boyne Estuary SPA (Site Code 004080), which are located respectively approximately 5.1km and c. 4km to the northeast of the Proposed Development.

It can be noted that the level of development recorded during fieldwork and distance from the coastal SPAs do not present opportunities to support the bird species (predominantly waders) for which the Boyne Estuary SPA (c. 4km) and River Nanny Estuary and Shore SPA (8.4km) are designated.

There is no connectivity to the River Boyne or to any other European sites within or outside the guideline 15 km zone of potential impact.

Description of the project or plan

The Proposed Development consists of the construction and operation of a 110kV GIS Substation, 4 number transformers and Client Control Building within a fenced compound; a 49kVa electrical supply to the 110kV GIS Substation; 2 number dropdown 110kV transmission lines comprising two new masts (c. 16 meters in height) and underground 110kV transmission lines; and all associated and ancillary development.

Is the project or plan directly connected with or necessary to the management of the site(s)

No

Are there other projects or plans that together with the projects or plan being assessed could affect the site

The permitted data storage facility and grid connection works are considered together as they will take place on the same Proposed Development site. The potential in-combination effects were considered with regard to grid connection but can be ruled out as the phased development includes connection via overhead power to an existing 110 kV powerline to the north of the Proposed Development site. The site works are included in the first phase of the Proposed Development. Similarly the phased development of the Masterplan within the Proposed Development site will not have connectivity to the River Boyne or to its associate European Sites and so in-combination effects can be ruled out.

The planning sections of the Meath and Louth County Council's websites were consulted on 28/08/20, and Tables 2 and 3 presents a list of applications that were granted permission in the vicinity of the Proposed Development within the past five years.

Table 1. Recent planning applications to MCC in the locality of the Proposed Development site.

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
FS16098 Costa Coffee, C/o Mr Sekar Natarajan,	Works to include the installation of new mezzanine floor, the installation of new emergency & general lighting, alterations to existing fire alarm, laying of floor finishes, erection of internal stud wall partitions, installation of prefabricated prefabricated feature joinery items such as balustrades, coffee counter etc, internal decoration & installation of fixed & loose furniture and the refurbishment of the existing WC	Costa Coffee Drogheda Retail Park Donore Road Drogheda, Co Meath	GRANT PERMISSION 17/10/2016
FS19155 Glenveagh Homes Ltd	Construction of new pre-school (Creche) within the Proposed Development at Rathmullen Road, Drogheda, Co Meath	Rathmullen Road, Drogheda, Co Meath	GRANT PERMISSION 03/10/2019
LB170240 MBCC Foods T/A Costa Coffee	The installation of a new mezzanine floor with an area of 54m^2 at 2.9 metres from ground floor level and a new emergency escape door on the north elevation.	Costa Coffee Unit, Drogheda Retail Park, Donore Road, Drogheda, County Meath	GRANT PERMISSION 25/07/2017
LB170675 Gallow Ash Limited	Demolition of an existing agricultural shed and the construction of 156 no. dwellinghouses, creche and all associated ancillary development works including access, parking, footpaths, lighting, foul and surface/storm water drainage, landscaping and amenity areas.	Rathmullan Road Drogheda Co. Meath	GRANT PERMISSION 15/06/2018
LB181492 Targeted Investment Opportunities ICAV	The construction of an extension to this retail warehouse unit comprising a stock room and an outdoor display area, internal modifications and fit-out, associated elevational changes including new fire exits, signage and all associated site works neccessary to facilitate the development	Unit 1A, Drogheda Retail Park Donore Road Drogheda, Co. Meath	GRANT PERMISSION 13/02/2019
SH305552 PL17.305552	(i) demolition of existing farm buildings/structures (1160sqm) on site; (ii) construction of 661 no. residential dwellings and a neighbourhood centre adjacent to the site's eastern boundary, consisting of a childcare facility (486sqm), café (63sqm) and retail unit (318sqm); (iii) a 4-arm signalised junction and works to Rathmullan Road, including the widening of the existing carriageway to 6 metres	Rathmullan Road Rathmullan Drogheda, Co. Meath	DECISION DUE 27/11/2019

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
Trailford Ltd	and the provision of a 2 metre wide footpath linking the Proposed Development to the River Boyne Boardwalk; (iv) 2 no. priority junctions (one along the site's eastern boundary to provide access to the neighbourhood centre and one along the site's southern boundary to provide a second access to the development), realignment and upgrade works to the un-named local road along the site frontage to the south of the new signalised junction with Rathmullan Road; (v) Construction of a strategic foul water pumping station in the north-eastern corner of the site; and (vi) all associated site, landscaping and infrastructural works, including foul and surface water drainage, attenuation areas, open space areas, boundary walls and fences, internal roads and cycle paths and footpaths. The 661 no. residential dwellings consist of the following: • 509 no. double storey semi-detached and terraced houses comprising 158 no. 2-bed houses, 269 no. 3-bed houses and 82 no. 4-bed houses; and • 152 no. apartments (in Blocks B1, B2, B3, C, D, E & G which vary from 3 to 5 storeys in height) comprising 13 no. 1-bed apartments and 139 no. 2-bed apartments. A total of 1,366 no. car parking spaces are proposed, including 1018 no. spaces (2 no. on curtilage spaces per dwelling) serving the proposed dwellings, 195 no. spaces serving the proposed apartments; 111 no. spaces serving visitors to the development; and 42 no. spaces serving the proposed neighbourhood centre. A total of 188 no. bicycle parking spaces are proposed, including 154 no. spaces serving the proposed apartments and 34 no. spaces serving the proposed neighbourhood centre. The development also features 9.15 hectares of public open space, including landscaped play spaces and pocket parks throughout the development and 6.13 hectares of landscaped open space provided adjacent to the Boyne River and M1 motorway frontages. This application is accompanied by an Environmental Impact Assessment Report (EIAR) and a Natura Impact Statement (NIS).		
FS17170 Melanie Bell	75.9 m2 side extension consisting of a single open plan classroom	Scribbles & Giggles Pre-School Day Centre Knightswood, Matthews Lane Platin Road, Lagavoreen Drogheda, Co Meath	GRANT PERMISSION 13/03/2018

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB141095 Tony Cromwell	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/901402 - demolition of the existing dwelling and associated out buildings, provision of new site access from Lagavooren Manor, construction of 7 new dwelling houses including drainage connection, car parking and all associated sit works	Beamore Road, Lagavooren, Drogheda, Co. Meath	GRANT PERMISSION 06/02/2015
LB141166 Rockview Development Ltd	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/900997 - Revisions to previously approved mixed use development Reg Ref SA60309. The development will consist of a 2 & 3 storey mixed use development comprising 2996sqm leisure centre, 1694.5sqm of retail space including an off lience, 389sqm medical centre, 707sqm creche with 120sqm outdoor play area, underground car park with 90 spaces, surface car park with 122 spaces, internal ancillary areas including circulation, plant rooms along with all external ancillary site development works including landscaing & boundary treatments & the omission of 4 no. previously approved type F housing blocks comprising 6 no. ground floor residential units & 6 no.. first/second floor duplex residential units	Avourwen Village & The Medows Plattin Road Duleek, Drogheda, Co. Meath	GRANT PERMISSION 24/02/2015
LB141185 Joe Murphy Developments	Change of house type from 14 No. two storey town houses types A B & C permitted as units 1-14 in planning permission SA/70537 extended under permission SA/121086 to 2 No. two storey three bedroom detached house type H and 10 No. two storey three bedroom semi detached houses type J and associated site works	Knightswood, Matthew Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 25/03/2015
SA120901 DDF Partnership	change of use of the previously permitted motor sales outlet (1680sqm) to medical clinic use at ground and first floor levels including ancillary staff, patient and administration areas. The development will also consist of minor elevational amendments including the provision of new glazing and cladding to existing opes and a new canopy to existing pedestrian door on the south east elevation and a new canopy to existing pedestrian door on the south west elevation and provision of 4 no. additional parking spaces adjacent to the east and south of the building. (The development will be served by permitted existing surface car parking provision.)	Unit 10 Drogheda Retail Park, Donore Road, Rathmullen, Co Meath	GRANT PERMISSION 11/02/2012
LB171481 Fergus & Shane	EXTENSION OF DURATION OF PLANNING PERMISSION No SA/120081 - Two no. additional four bedroom, two storey semi-detached dwellinghouses (Circa 112m2 each) with associated siteworks, drainage and parking measures	No. 31, The Lawns, Highlands, Rathmullen Road, Drogheda, Co. Meath	GRANT PERMISSION 20/12/2017

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
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LB190093 Ravala Ltd	alterations to dwellings on site numbers 138-142 (5no. dwellings) as granted under planning under planning ref: LB160450 to now include 7no. 2-bedroom Disability/Retirement bungalows, with all associated landscaping, site development and civil works. This equates to 2 additional dwellings	Knightswood, Matthews Lane, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 01/02/2019
SA121086 Martin Dunne (per Martin Ferris Receiver)	EXTENSION OF DURATION OF PLANNING PERMISSION REF. NO. SA/70537 - 172 unit residential development	Mathews Lane, Platin Road, Lagavoureen, Drogheda Co Meath	GRANT PERMISSION 20/12/2012
LB151408 J Murphy Developments Ltd	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no.	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	type H (2 storey 3 bed semi detached town houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185		
LB170414 Scribbles & Giggles Creche	the development will consist of a single storey one classroom side extension and all associated site works	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 19/04/2017
LB171546 J Murphy Developments Ltd	EXTENSION OF DURATION OF PLANNING PERMISSION LB160450 - Development will consist of change from 94no. mixed house types and duplex apartments on site numbers (79-172) as granted under planning ref: SA60423, SA70537 & SA121086 to 30no. Type H (3-bed semi-detached), 3no. Type G (3-bed detached), 18no. Type J (3-bed end of terrace) & 12no. Type K (2-bed mid terrace) all on site number 86-148. This represents a decrease of 24 units. The development will also consist of change of house Type G (3-bed detached) on site number 55 as granted under planning ref: LB151408 to 2no. Type H (3-bed semi-detached) with all associated site & civil works. This represents an increase of 1 unit.	Knightswood, Matthews Lane, Drogheda, Co. Meath	GRANT PERMISSION 29/12/2017
LB160450 J Murphy Development Limited	development will consist of change from 94no. mixed house types and duplex apartments on site numbers (79-172) as granted under planning ref: SA60423, SA70537 & SA121086 to 30no. Type H (3-bed semi-detached), 3no. Type G (3-bed detached), 18no. Type J (3-bed end of terrace) & 12no. Type K (2-bed mid terrace) all on site number 86-148. This represents a decrease of 24 units. The development will also consist of change of house Type G (3-bed detached) on site number 55 as granted under planning ref:	Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 10/05/2016

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	LB151408 to 2no. Type H (3-bed semi-detached) with all associated site & civil works. This represents an increase of 1 unit. Significant further information/revised plans submitted on this application		
LB190254 Ruth & Andy Kiernan	*demolition of an existing utility room to side of the existing dwelling, * removal and replacement of roofs to existing dwelling, * construction of 2 no. new single storey extensions to the rear of the existing dwelling, including a 2 bedroom assisted-living family flat, * construction of a first floor extension over existing single storey section of dwelling, * construction of a new detached garage to the side of the existing dwelling, * alterations and improvements to the existing site entrance, * decommissioning of existing septic tank & provision of new proprietary wastewater treatment system & percolation area * and all associated site works. Significant further information/revised plans submitted on this application	Donore Road, Drogheda, Co. Meath	GRANT PERMISSION 08/03/2019
LB141038 Harvest Distilling & Brewing Ltd.,	change of use of former car showroom and maintenance workshop to new distillery, brewery and visitors centre, with associated new buildings including warehouse and site development works. The development shall consist of new distillery, brewery together with canning and bottling lines, whiskey filling area, barrell storage, associated offices, laboratory, restaurant, retail area, tasting rooms, kitchen, including preparation and servery area, associated stores and offices all within existing buildings. Permission sought for visitors centre incorporating new entrance foyer with function room at first floor level, roof garden at second	Bryanstown,, Duleek, Co. Meath	GRANT PERMISSION 20/11/2014

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	floor level, new service building with plant rooms and amenity facilities, external tanks and silos, new warehouse with offices over three floors, machinery building, site development works, including car-parking, disabled car parking, car parking for electrical re-charging of eco cars, bus parking, cycle parking, new vehicular service entrance, storm water attenuation and harvesting systems, foul sewer pumping station with rising main to existing manhole located at entrance to Knights Wood residential development, at access off Matthews Lane		
LB160011 Harvest Distilling & Brewing Ltd.	land permission for retention of developments. The development consists of A. Change in layout of whiskey storage area granted planning permission under planning reference LB141038, to incorporate new keg filling area, cider process area including external tank, mezzanine area and covering of existing ramp to basement. B. New fire water storage tank with pump house and associated site development works. C. Retention permission of ESB sub-station, with adjoining switch room and pump house	Bryanstown, Platin Road, Drogheda, Co. Meath	GRANT PERMISSION 12/01/2016
LB141022 Laurence Cassidy	the development will consist of the following, the change of use of existing house from commercial 6 bedroom non residential bed and breakfast to residential dwelling house	Platin Lower, Duleek, Drogheda, Co. Meath	GRANT PERMISSION 14/11/2014
SA120881	1. retention and completion of a new 3 bedroom storey-and-half replacement dwelling, 2. retention and completion of existing garage, 3. proposed relocation and improvement of existing	Drogheda Road, Donore, Co Meath	GRANT PERMISSION

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
Danielius Stankevicius	vehicular entrance, 4. proposed proprietary waste water treatment system and percolation area, 5. all associated site works		08/10/2012
SA100051 James Gogarty	alterations to front, side & rear elevations of existing building, (2) a two storey extension to front elevation, (3) a single storey extension to the side & rear elevations, (4)the construction of a new side entrance attached to the west side of the dwelling, (5) the construction of a small green house located to the rear of the site & (6) all associated site development works connected with the development	Dunamaise House, Donore Road, Donore, Drogheda Co Meath	GRANT PERMISSION 27/01/2010
SA110353 Drogheda Town Football Club	2 No. Football pitches, carparking, 2 No. Temporary storage containers and all associated site works.	Platin Road, Lagavoreen, Co. Meath	GRANT PERMISSION 18/04/2011
SA110622 Mark & Tanya Curry	a proposed two storey extension to the side, including a single storey extension to the rear of the existing dwelling house and all associated site works	No. 6 The Crescent, Highlands, Rathmullan, Drogheda, Co Meath	GRANT PERMISSION 27/06/2011
LB180873 Michael & Lynn McGovern	retention of existing single storey extension to rear and side of existing two-storey dwelling and proposed first floor extension to side of existing two-storey dwelling	No. 13, The Court, Highlands, Rathmullan, Drogheda, Co. Meath	GRANT PERMISSION 07/08/2018

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB140854 Lyndsey McHugh and Rodney Everitt	the development will consist of new two storey extension to side and rear of existing dwelling and new single storey sunroom extension to rear of existing dwelling along with all associated site works	17 The Green, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 26/09/2014
LB160950 Donal & Tara Murphy	development will consist of the construction of a new first floor extension over existing single storey part to side of dwelling and a new single storey extension to rear of existing dwelling, together with all associated site works	16 The Avenue, Highlands,Drogheda, Co. Meath	GRANT PERMISSION 31/08/2016
LB140854 Lyndsey McHugh and Rodney Everitt	the development will consist of new two storey extension to side and rear of existing dwelling and new single storey sunroom extension to rear of existing dwelling along with all associated site works	17 The Green, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 26/09/2014
LB190177 Ian & Mary Barrett	the construction of a new single-storey extension to the side and rear of existing dwelling, together with all associated site works	3 The Lawn, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 21/02/2019

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB160950 Donal & Tara Murphy	development will consist of the construction of a new first floor extension over existing single storey part to side of dwelling and a new single storey extension to rear of existing dwelling, together with all associated site works	16 The Avenue, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 31/08/2016
LB181033 Joseph & Denise Connor	proposed two storey/single storey rear extension to existing two story dwelling and all associated works	25 The Drive, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 07/09/2018
SA140457 Robert Byrne	first floor side extension to existing dwelling and all associated site works	53 The Drive, Highlands, Rathmullen Road, Drogheda, Co. Meath	GRANT PERMISSION 29/05/2014
LB171168 Barry Whelan	the development will consist of the following: (a) construction of a first floor extension over single storey part to side of existing dwelling (b) construction of a single storey extension to rear of existing dwelling (c) construction of a bay window to front of existing dwelling (d) all associated site works	50 The Drive, Highlands, Drogheda, Co. Meath	GRANT PERMISSION 06/10/2017
SA110864 Kevin O'Brien	1. Permission to construct a single storey extension to rear of dwelling with all ancillary site works and 2. Permission for retention of domestic store/garage, upgraded Puraflo wastewater treatment system with polishing filter, revised site layout and alteration to single storey extension to side of dwelling from plans previously submitted under SA/70395	Newtown, Platin , Drogheda, Co Meath	GRANT PERMISSION 15/09/2011

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
LB150245 Siobhan & John Conway	development consists of modifications and alterations to the existing dwelling and a new single storey extension to the side and rear, including upgrading the existing septic tank to a new wastewater treatment system and percolation area and all associated site works.	Newtown Platin, Donore, Co. Meath	GRANT PERMISSION 12/03/2015
SA100452 Deirdre Bidwell	construction of a single story extension to the south facing elevation of the existing dwelling, comprising of a sunroom and all associated site works.	Newtown Platin, Donore Co Meath	GRANT PERMISSION 06/05/2010
LB151408 J Murphy Developments Ltd	change of house type from 38 no. type A (2 storey 3 bed semi detached town houses) on site numbers 41 - 78 Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference SA60423, SA70537 and SA121086 to 18no. type H (3 bed semi detached town houses), 14no. type J (3 bed end of terrace town houses), 11no. type K (2 bed mid terrace town houses), and 1 no. type G (2 storey 3 bed detached town house). This application represents an increase of 6 units from 38 to 44 as approved under registry reference SA60423, SA70537 and SA121086. The development will also consist of change of house type from 2 no type J (3 bed end of terrace town houses) and 2 no. type K(2 bed mid terrace town houses) on site numbers11-14 Knightswood, Matthews Lane, Platin Road, Lagavoreen, Drogheda, Co Meath granted under planning permission registry reference LB141185 to 2 no. type H (2 storey 3 bed semi detached town	Knightswood, Mathews Lane, Platin Road, Lagavoreen, Drogheda , Co Meath	GRANT PERMISSION 23/12/2015

Meath County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
	houses) and 1no. type G (2 storey 3 bed detached town house on site numbers 11-13. This application represents a decrease of 1 unit from that approved under planning permission registry reference LB141185		
LB190093 Ravala Ltd	alterations to dwellings on site numbers 138-142 (5no. dwellings) as granted under planning under planning ref: LB160450 to now include 7no. 2-bedroom Disability/Retirement bungalows, with all associated landscaping, site development and civil works. This equates to 2 additional dwellings	Knightswood, Matthews Lane, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 01/02/2019
LB141185 Joe Murphy Developments,	change of house type from 14 No. two storey town houses types A B & C permitted as units 1-14 in planning permission SA/70537 extended under permission SA/121086 to 2 No. two storey three bedroom detached house type H and 10 No. two storey three bedroom semi detached houses type J and associated site works	Knightswood, Matthew Lane, Platin Road, Lagavoreen, Drogheda, Co. Meath	GRANT PERMISSION 31/12/2014

Table 3. Recent planning applications to LCC in the locality of the Proposed Development site.

Louth County Council Planning Application Reference No. & Applicant	Summary Description of Development	Location of Development	Outcome & Final Grant Date
13510015	Extension of Duration of Planning Permission 08/170 which consists of Permission for four-storey office building with rooftop plant room (total floor area 4531sq.m.) accommodating 8	Matthews Lane, Donore Industrial Estate Road, Drogheda, County	GRANT PERMISSION

Seamus Domegan	no. office units ranging in size from 200sq.m to 696sq.m. Development includes 88 no. surface car parking spaces, bicycle parking, a 22.8sq.m. ESB substation, refuse store, landscaping, boundary treatment, services, illuminated building signage & ancillary site works. Development also includes a 7.0m high by 2.2m wide free-standing double sided monolith advertising sign with up-light illumination.	Louth	27/02/2013
11510022 Lorraine Prendergast	Single storey pitched roof extension to side comprising a Kitchen & Shower Room, also an Attic Study with Rooflights.	11 Knockbrack Close, Drogheda, Co. Louth.	GRANT PERMISSION 21/03/2011
14510014 Keith Smyth	Permission for construction of 2 storey extension to side of existing dwelling house over existing ground floor, new bay window and porch along with all associated site works	26 Knockbrack Close, Matthews Lane, Drogheda, County Louth	GRANT PERMISSION 18/02/2014
17918 McBreen Environmental	Permission to erect a fully serviced two storey office building with attached workshop / maintenance building, form hardstanding yard for vehicle parking, truck wash facilities for private use, erect perimeter fencing, install pumping station, connection to existing services and all ancillary and associated works.	East Coast Business Park, Matthews Lane, Donore Road, Drogheda	GRANT PERMISSION 11/12/2017
10510103	Extension & alterations to existing school buildings to include 6 no. CLASSROOMS together with ancillary accommodation, along with all	St. Oliver's Community College, Rathmullen Road,	GRANT PERMISSION

Co. Louth V.E.C.	associated site works.	Drogheda.	01/10/2010
10510034 County Louth V.E.C.,	Six no. temporary CLASSROOMS along with all associated site works.	St. Oliver's Community College, Rathmullen Road, Drogheda	GRANT PERMISSION 30/03/2010
14510021 Board of Management St Oliver's Community College	Permission for a single storied extension and alterations to the existing school buiding in two separate locations to include a new entrance, 10 no. classrooms and offices together with ancillary accommodation and associated site works	St Oliver's Community College, Rathmullan Road, Drogheda, County Louth	GRANT PERMISSION 07/03/2014
15675 Louth & Meath Education & Training Board (LMETB)	Permission for Proposed Development will consist of a new two-storey administrative headquarters building. The building will be exclusively occupied by the applicant (LMETB) for the purposes of administering educational & training services in the Louth & Meath areas. The Proposed Development also provides for 57 no surface car parking spaces, cycle parking, landscaping and boundary treatment, signage and all associated site development works. Vehicular access to the Proposed Development is provided via a new access off Marley's Lane.	Marley's Lane / Rathmullen Road, Drogheda, County Louth	GRANT PERMISSION 12/10/2015
	Extension & alterations to existing school buildings to include 6 no. CLASSROOMS together	St. Oliver's Community College,	GRANT PERMISSION

10510103 Co. Louth V.E.C.	with ancillary accommodation, along with all associated site works.	Rathmullen Road, Drogheda.	01/10/2010
14574 Respond Housing Association	Permission for a single storey extension to the existing bungalow and site development works to provide for a new private disabled carparking space, which includes new vehicular access, boundary modifications and relocation of 3 existing carparking spaces to existing public green.	77 Tredagh View, Marleys Lane, Drogheda, Co Louth	GRANT PERMISSION 12/12/2014
19237 Ian Farrell & Nicola Farrelly	Permission to construct a single storey 24m2 extension to the east of the dwelling, to demolish a section of the existing dining room wall and to create a 1550mm opening into the proposed 20m2 family room with a 4m2 WC and utility room.	37 Marley Court, Drogheda, Co Louth	GRANT PERMISSION 29/03/2019
18292 Gary & Eavan Doyle	Permission requested for new two-storey extension to eastern side of existing two-storey dwelling house along with associated internal alterations and siteworks.	21 Cedarfield, Drogheda, Co. Louth	GRANT PERMISSION 20/04/2018
13510066	Permission for: (i) Timber shopfront to existing pub entrance to the south elevation (ii) covered enclosure to existing smoking area with slate covered projecting canopy structure including projecting canvas awnings and free standing wind breakers all to south west elevation (iii)	The Thatch Public House, Donore Road, Drogheda, Co Louth	GRANT PERMISSION 20/09/2013

Berchmans Enterprises Limited	Retention permission is sought for halo illuminated signage to the south west elevation, and associated site works. The Proposed Development is within the curtilage of a Protected Structure ***Grant Permission for (i) Timber shopfront to existing pub entrance to the south elevation (ii) covered enclosure to existing smoking area with slate covered projecting canopy structure including projecting canvas awnings and free standing wind breakers all to south west elevation subject to 4 conditions in Schedule 1*** To Grant Permission for (iii) Retention permission is sought for halo illuminated signage to the south west elevation, and associated site works subject to the 2 conditions in Schedule 2**		
18786 Maxol Ltd	Permission is sought for the following: (i) A 182 sq.m. extension to the existing shop, deli and off licence, and the creation of a modernised shop, wine off license, deli and seating area, (ii) Extension of existing forecourt to provide designated parking, (iii) Minor realignment of existing access points, (iv) Ninetenn car parking spaces and new cycle parking stands, (v) Relocation of offset fill point and vent pipes, (v) Relocation of existing car wash, (vi) New corporate signage. The Proposed Development also includes all site develoment works including drainage and landscaping.	Maxol Service Station, Donore Road, Drogheda, Co Louth, A92HX9A	GRANT PERMISSION 28/09/2018
19724 Maxol Limited	Retention & Permission for development on a site of approximately 0.3549 hectares, which currently accommodates a Maxol Service Station, and unit 9 (a garden centre). The Proposed Development will consist of the demolition of Unit 9 (a two storey building, 462sqm) and removal of associated structures and the removal of part of the existing service station forecourt canopy; and the construction of single storey extension (275sqm) onto the	Maxol Service Station, Donore Road, Drogheda, Co Louth	GRANT PERMISSION 06/09/2019

	existing single storey forecourt building (155sqm), resulting in a forecourt building of 430sqm. The resultant forecourt building will accommodate a 100 sqm shop (including a 9 sqm ancillary off-licence; 3 no. restaurant/café areas (which will include for the sale of hot and cold food for consumption on and off the premises) (one of which will include a drive-thru facility); associated restaurant/café seating areas; ancillary kitchens, staff and customer facilities, plant, storage, back of house and circulation spaces. The development will also consist of elevational changes to the existing building; signage (replacement of a 6.5m high double sided internally illuminated totem sign, new shopfront signage, some internally illuminated, and signage associated with the car wash); external lighting; revisions to the site layout (the provision of 43 no. car parking spaces, bicycle parking spaces, waste and plant storage area; new replacement car wash, vent pipes, offset fill point and air/water services point); changes to levels; hard and soft landscaping, including revised boundary treatments and an external public seating area; associated site servicing (water supply, foul and surface water drainage including surface water attenuation measures); all other associated site development works above and below ground; realignment of the existing vehicular access points at Donore Road; and closure of the existing vehicular access to the garden centre site. Retention permission is sought for development consisting of a parcel collection kiosk.		
18674 Energy Efficient Homes Ltd.	The development will consist of the following: 1. Retention of change of use of unit 2. Retention of the subdivision of existing commercial unit along with internal alterations 3. Retention of alterations to existing east elevation which include 2no. doors and 1no. window 4. Retention	Unit 1 A, Block 2, Drogheda Industrial Park, Donore Road, Drogheda Co Louth	GRANT PERMISSION 24/08/2018

	of existing signage 5. Proposed alterations to existing elevations which include 1no. new door on the east elevation, and 1no. window to be removed and 5no. new windows to the west elevation.		
17672 Mardam Ltd	Permission for the development that consists of the retention of offices at ground and first floor level, and retention of a mezzanine floor and the Proposed Development will consist of completion of the retention works, a personnel door in the rear façade of the building, internal alterations and for associated site works.	Unit 1b, Block 2, Drogheda Industrial Estate, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 11/09/2017
18320 Joe Duffy Property Company Limited	Permission for an extension at (Former Tom Fox) car showroom site. The development consists of extensions to the south and east elevations to form additional workshop area and car valeting/wash facilites, (combined addition of 243.7m2 floor area), with associated internal reconfiguration. External customer parking layout and used display areas to be reconfigured. Elevations to receive new external cladding, and corporate signage consisting; 1 brand pylon, 1 directional pylon and 4 fascia signs.	Former Tom Fox Car Showroom site, New Grange Business Park, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 27/04/2018
16922 Renata Jakutiene	Retention Permission for development consisting of change of use of existing mixed retail and onsite learning activity and development centre use from previously granted retail werehousing granted under register reference 04197. Retention is also sought for existing signage located on external wall of building.	Unit 2a, Drogheda Industrial Park, Donore Road, Drogheda, Co. Louth	GRANT PERMISSION 20/12/2016
15615	Retention Planning Permission for retention of the first floor constructed in the existing unit and for permission for a change of use from light industrial/retail use to a fitness centre at ground	Unit 11B, Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION

Gary Kelly	level.		17/09/2015
16239 Ian Madden	Retention permission for a change of use from a manufacturing/retail use to a taxi/cab operational facility also retention permission for the palisade fence along the south eastern boundary of the complex.	Unit 11A Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 15/04/2016
13510049 Pharaway Properties Limited	Permission for development will consist of the change of use of c.37m² of the existing bulk storage area to Class 1 retail sales area (non-food) & all associated site development works & site services with the Tesco Supermarket.	Matthews Lane, Rathmullan, Drogheda, County Louth	GRANT PERMISSION 11/07/2013
10510088 Blackstone Motors Ltd.,	Change of use of part of ground floor from industrial/warehouse/wholesale retail to Motor Vehicle Sales & will also include alterations to existing building facade, an extension of 194 sq.m. to west side of existing building, the erection of Advertising Flags, Totem Signs, Facade Mounted Signage, new paladin boundary fence along southern boundary & all ancillary site dev. works & services.	Newgrange Business Park, Donore Road, Drogheda	GRANT PERMISSION 27/08/2010

17719 Nature's Best Ltd	Permission to construct a single storey factory extension of 2,682 square meters to provide loading bay, cold storage, packaging room, production area, plant room and all associated site works.	Greenvale Park, Rathmullen , Matthews Lane, Drogheda, Co. Louth. A92FT59	GRANT PERMISSION 25/09/2017
17377 Lidl Ireland GmbH	Retention permission and completion of ongoing development consisting of amendments to planning permission reference 15/716 (relating to the construction of a new licenced discount foodstore). The Proposed Development comprises 1)The extension of site area to 1.18 hectares; 2) reconfirguration and extension of permitted car park to provide 181 no. parking spaces; 3) relocation of permitted pedestrian entrance on Donore Road; 4) Installation of plant/equipment to roof of delivery / loading bay; and 5) associated and ancillary revisions to permitted hard and soft landscaping and boudaries and boundary treatments, and all other associated and ancillary modifications to 15/716 above and below ground level.	Donore Road , Drogheda, Co Louth	
10510110 Lidl Ireland Gmbh	Single storey extension with a flat roof & located to the front of the existing store & will be finished with materials consistent with the existing store. The proposed dev. also comprises an enclosed plant area adjoining the proposed extension, internal modifications/connections to the existing store & all assoc. works. Relocate existing car parking spaces, connection to existing services on site with all ancillary site dev. works.	Donore Road, Drogheda	

11510042 DDF PARTNERSHIP	EXTENSION OF DURATION ON PLANNING FILE 04/324 - DEMOLITION OF FACTORY BUILDINGS & CONSTRUCTION OF 6 NO. RETAIL WAREHOUSE UNITS	FORMER TELLABS SITE, DONORE ROAD, DROGHEDA	
19504 Gatevale Ltd. T/A John McCabe Nissan Drogheda	Permission for a new car showroom with attached ancillary vehicle maintenance unit, building signage, surface car parking area with lighting, totem signage poles, new boundary fence/walls, use of existing vehicle entrance onto Donore Industrial Estate road and all associated site/civil development works.	Donore Industrial Estate, Donore Road, Lagavoreen, Drogheda, Co Louth	
16508 Irish Breeze Limited	Permission for the following: 1. to erect 2no. (8.1m x 1.7m) external LED backlit signs to south and east facades of the building, 2. erection of a two storey 258m2 extension to the south facade of the building for water tank storage purposes and an engineer's workshop, and including all associated site development works required for the above works.	Matthew's Lane South, Donore Road Industrial Estate, Drogheda, Co. Louth	
16507	Retention permission for the following: 1. Upgrade of site boundary fencing to the east and south to 2.4m high to matching existing, 2. the installation of 2 no. 2.4m high sliding gates to front (east) and rear (south) entrances. 3. the construction of 1no. single storey external 73m2 structure, adjacent to the northern site boundary for storage of pallets only, 4. 1no. 129m2	Matthew's Lane South, Donore Road Industrial Estate, Drogheda, Co. Louth	

Irish Breeze Limited	concrete pad with associated retaining walls and water tanks, adjacent to southern boundary, 5. for a second loading dock to the east of the existing loading dock on the north facade, 6. a 40m2 fenced compound with concrete pad, for a chiller unit as part of an air conditioning system to the south east corner of the building, adjacent to the southern boundary & 7. two no. 1600mm x 400mm external signs, positioned either side of entrance on existing wing walls, and including all associated site development works.		

Significant effects can be excluded with the developments in Tables 2 and 3 given that it is predicted that the Proposed Development will have no effect on any European site.

The Meath and Louth County Development Plans and Local Area Plans in complying with the requirements of the Habitats Directive require that all Projects and Plans that could affect the Natura 2000 sites in the same zone of impact of the Proposed Development site would be initially screened for Appropriate Assessment. In this way, in-combination effects with Plans or Projects for the development area and surrounding townlands in which the development site is located, would be avoided.

Any new applications for the Proposed Development area will be assessed initially on a case by case basis by Meath or Louth County Council which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

THE ASSESSMENT OF SIGNIFICANCE OF EFFECTS

Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site.

A review of aerial photography, Ordnance Survey Ireland (OSI) mapping and OSI Geographical Information System (GIS) data for rivers and streams indicates that there are no watercourses in the vicinity of the Proposed Development site. This was confirmed during fieldwork on habitat assessment on 5 February and 17 April 2019 and 3 September 2020.

There is no connectivity to the River Boyne or to any other European sites within or outside the guideline 15 km zone of potential impact.

There will be no direct or indirect impacts from construction activity or from the operation of the Proposed Development on the River Boyne and therefore on any European sites associated with the River Boyne.

Explain why these effects are not considered significant.

There are no predicted effects on any European sites given:

- The distance between the Proposed Development and any European Sites, approximately 1km;
- The lack of connectivity between the Proposed Development and any hydrological pathways; there are no watercourses within the Proposed Development boundary and there is no connectivity between the Proposed Development site and any watercourses that lead to the River Boyne;
- The Proposed Development is to be connected to the existing public sewer network for the treatment of wastewater.
- There are no predicted emissions to air, water or the environment during the construction or operational phases that would result in significant effects

List of agencies consulted: provide contact name and telephone or e-mail address

The requirement for Appropriate Assessment Screening was determined during pre-planning discussion with Meath County Council.

Response to consultation

N/A.

DATA COLLECTED TO CARRY OUT THE ASSESSMENT

Who carried out the assessment

Moore Group Environmental Services.

Sources of data

NPWS database of designated sites at www.npws.ie

National Biodiversity Data Centre database http://maps.biodiversityireland.ie

Level of assessment completed

Desktop Assessment. Fieldwork was carried out as part of the EIA process.

Where can the full results of the assessment be accessed and viewed

An Bord Pleanála Planning web portal.

OVERALL CONCLUSIONS

There is no connectivity to the River Boyne or to any other European sites within or outside the guideline 15 km zone of potential impact.

There are no predicted effects on any European sites given:

- The distance between the Proposed Development and any European Sites, approximately 1km;
- The lack of connectivity between the Proposed Development and any hydrological pathways; there are no watercourses within the Proposed Development boundary and there is no connectivity between the Proposed Development site and any watercourses that lead to the River Boyne;
- The Proposed Development is to be connected to the existing public sewer network for the treatment of wastewater.
- There are no predicted emissions to air, water or the environment during the construction or operational phases that would result in significant effects.

Having considered the above, significant effects on any European sites as a result of the Proposed Development have been ruled out and potential significant effects on European sites have been excluded at a preliminary screening stage.

It has been objectively concluded by Moore Group Environmental Services that:

1. The Proposed Development is not directly connected with, or necessary to the conservation management of the European sites considered in this assessment.
2. The Proposed Development is unlikely to either directly or indirectly significantly affect the Qualifying interests or Conservation Objectives of the European sites considered in this assessment.
3. The Proposed Development, alone or in combination with other projects, is not likely to have significant effects on the European sites considered in this assessment in view of their conservation objectives.
4. It is possible to conclude that significant effects can be excluded at the screening stage.

It can be excluded, on the basis of objective information, that the Proposed Development, individually or in combination with other plans or projects, will have a significant effect on a European site.

It is the view of Moore Group Environmental Services that it is not necessary to undertake any further stage of the Appropriate Assessment process.

9.0 AIR QUALITY & CLIMATE

9.1 INTRODUCTION

This chapter evaluates the impacts in which the Proposed Development may have on Air Quality & Climate as defined in the Environmental Protection Agency (EPA) documents Draft 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (2017) and the EPA Draft 'Advice Notes for Preparing Environmental Impact Statements' (2015).

The Proposed Development is described in Chapter 2.

9.2 METHODOLOGY

9.2.1 Criteria for Rating of Impacts

9.2.1.1 Ambient Air Quality Standards

In order to reduce the risk to health from poor air quality, National and European statutory bodies, the Department of the Environment, Heritage and Local Government in Ireland and the European Parliament and Council of the European Union, have set limit values in ambient air for a range of air pollutants. These limit values or "Air Quality Standards" are health or environmental-based levels for which additional factors may be considered. For example, natural background levels, environmental conditions and socio-economic factors may all play a part in the limit value which is set (see Table 9.1).

Air quality significance criteria are assessed based on compliance with the appropriate standards or limit values. The applicable standards in Ireland include the Air Quality Standards Regulations 2011, which incorporate European Commission Directive 2008/50/EC, which has set limit values for the pollutants PM_{10}, and $PM_{2.5}$ relevant to this assessment. Council Directive 2008/50/EC combines the previous Air Quality Framework Directive (96/62/EC) and its subsequent daughter directives (including 1999/30/EC and 2000/69/EC) and includes ambient limit values relating to $PM_{2.5}$. Dust emissions and PM_{10}/$PM_{2.5}$ emissions are the primary concern in terms of air quality in relation to the Proposed Development.

Table 9.1 Ambient Air Quality Standards

Pollutant	Regulation [Note 1]	Limit Type	Value
Dust Deposition	TA Luft (German VDI 2002)	Annual average limit for nuisance dust	350 mg/(m^2*day)
Particulate Matter (as PM_{10})	2008/50/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m^3 PM_{10}
		Annual limit for protection of human health	40 µg/m^3 PM_{10}
Particulate Matter (as $PM_{2.5}$)	2008/50/EC	Annual limit for protection of human health	25 µg/m^3 $PM_{2.5}$

Note 1 EU 2008/50/EC – Clean Air For Europe (CAFÉ) Directive replaces the previous Air Framework Directive (1996/30/EC) and daughter directives 1999/30/EC and 2000/69/EC

9.2.1.2 Dust Deposition Guidelines

The concern from a health perspective is focused on particles of dust, which are less than 10 microns, and the EU ambient air quality standards outlined in section 9.2.1.1 have set ambient air quality limit values for PM_{10} and $PM_{2.5}$.

With regard to larger dust particles that can give rise to nuisance dust, there are no statutory guidelines regarding the maximum dust deposition levels that may be generated during the construction phase of a development in Ireland.

However, guidelines for dust deposition, the German TA-Luft standard for dust deposition (non-hazardous dust) (German VDI, 2002) sets a maximum permissible emission level for dust deposition of 350 mg/(m^2*day) averaged over a one year period at any receptors outside the site boundary. The TA-Luft standard has been applied for the purpose of this assessment based on recommendations from the EPA in Ireland in the document titled 'Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals) (EPA, 2006). The document recommends that the Bergerhoff limit of 350 mg/(m^2*day) be applied to the site boundary of quarries. This limit value can be implemented with regard to dust impacts from construction of the Proposed Development.

9.2.1.3 Gothenburg Protocol

In 1999, Ireland signed the Gothenburg Protocol to the 1979 UN Convention on Long Range Transboundary Air Pollution. The initial objective of the Protocol was to control and reduce emissions of Sulphur Dioxide (SO_2), Nitrogen Oxides (NO_X), Volatile Organic Compounds (VOCs) and Ammonia (NH_3). In 2012, the Gothenburg Protocol was revised to include national emission reduction commitments for the main air pollutants to be achieved in 2020 and beyond and to include emission reduction commitments for $PM_{2.5}$.

European Commission Directive 2001/81/EC and the National Emissions Ceiling Directive (NECD), prescribes the same emission limits as the 1999 Gothenburg Protocol. A National EPA Programme for the progressive reduction of emissions of these four transboundary pollutants has been in place since April 2005. The data available from the EPA in 2020 (EPA, 2020) indicated that Ireland complied with the emissions ceilings for SO_2, NH_3, NO_X and NMVOCs in recent years. Directive (EU) 2016/2284 "*On the Reduction of National Emissions of Certain Atmospheric Pollutants and Amending Directive 2003/35/EC and Repealing Directive 2001/81/EC*" was published in December 2016. The Directive will apply the 2010 NECD limits until 2020 and establish new national emission reduction commitments, which will be applicable from 2020 and 2030 for SO_2, NO_X, NMVOC, NH_3, $PM_{2.5}$ and CH_4. In relation to Ireland, 2020 emission targets are 25.5 kt for SO_2 (65% on 2005 levels), 66.9 kt for NO_X (49% reduction on 2005 levels), 56.9 kt for NMVOCs (25% reduction on 2005 levels), 112 kt for NH_3 (1% reduction on 2005 levels) and 15.6 kt for $PM_{2.5}$ (18% reduction on 2005 levels). In relation to 2030, Ireland's emission targets are 10.9 kt (85% below 2005 levels) for SO_2, 40.7 kt (69% reduction) for NO_x, 51.6 kt (32% reduction) for NMVOCs, 107.5 kt (5% reduction) for NH_3 and 11.2 kt (41% reduction) for $PM_{2.5}$.

9.2.1.4 Climate Agreements

Ireland ratified the United Nations Framework Convention on Climate Change (UNFCCC) in April 1994 and the Kyoto Protocol in principle in 1997 and formally in May 2002 (UNFCCC, 1997). For the purposes of the EU burden sharing agreement under Article 4 of the Doha Amendment to the Kyoto Protocol, in December 2012, Ireland agreed to limit the net growth of the six Greenhouse Gases (GHGs) under the Kyoto Protocol to 20% below the 2005 level over the period 2013 to 2020 (UNFCCC,

2012). The UNFCCC is continuing detailed negotiations in relation to GHGs reductions and in relation to technical issues such as Emission Trading and burden sharing. The most recent Conference of the Parties to the Convention (COP25) took place in Madrid, Spain from the 2nd to the 13th of December 2019 and focussed on advancing the implementation of the Paris Agreement. The Paris Agreement was established at COP21 in Paris in 2015 and is an important milestone in terms of international climate change agreements. The Paris Agreement is currently ratified by 187 nations and has a stated aim of limiting global temperature increases to no more than 2°C above pre-industrial levels with efforts to limit this rise to 1.5°C. The aim is to limit global GHG emissions to 40 gigatonnes as soon as possible whilst acknowledging that peaking of GHG emissions will take longer for developing countries. Contributions to greenhouse gas emissions will be based on Intended Nationally Determined Contributions (INDCs) which will form the foundation for climate action post 2020. Significant progress was also made on elevating adaption onto the same level as action to cut and curb emissions.

The EU in 2014, agreed the "2030 Climate and Energy Policy Framework" (EU, 2014). The European Council endorsed a binding EU target of at least a 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990. The target will be delivered collectively by the EU in the most cost-effective manner possible, with the reductions in the ETS and non-ETS sectors amounting to 43% and 30% by 2030 compared to 2005, respectively. Secondly, it was agreed that all Member States will participate in this effort, balancing considerations of fairness and solidarity. The policy also outlines, under "Renewables and Energy Efficiency", an EU binding target of at least 27% for the share of renewable energy consumed in the EU in 2030.

In relation to the EU 20-20-20 targets for CO_2, Ireland has a target of a 20% reduction in non-Emission Trading Scheme (non-ETS) greenhouse gas emissions by 2020 relative to the 2005 levels. The Environmental Protection Agency (EPA) confirmed that the 2018 levels are 5.59 Mt CO_2eq over the target and projections to 2020 indicate that the target is unlikely to be met in future years (EPA, 2019a, 2019b).

The *Climate Action and Low Carbon Development Act 2015* specifies plans to be drafted and approved by the Government in relation to climate change for the purpose of pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy. The act required the establishment of the Climate Change Advisory Council and the creation and approval by the government of a *National Mitigation Plan* (to be published every five years), *National Adaptation Framework* and an *Annual Transition Statement*. The first *National Mitigation Plan* for Ireland was published in July 2017 and outlines the central roles of the key Ministers responsible for the sectors covered by the Plan – Electricity Generation, the Built Environment, Transport and Agriculture. This first Plan outlines the initial foundations to be implemented to transition Ireland to a low carbon, climate resilient and environmentally sustainable economy by 2050. The Plan also includes over 100 individual actions for various Ministers and public bodies to take forward.

In addition to the publication of the *National Mitigation Plan*, the government subsequently published a *Climate Action Plan* in 2019. The *Climate Action Plan* outlines the status across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and outlines the various broadscale measures required for each sector to achieve ambitious decarbonisation targets. The *Climate Action Plan* also details the required governance arrangements for implementation including carbon proofing of policies, establishment of carbon budgets, a

strengthened Climate Change Advisory Council and greater accountability to the Oireachtas.

Individual county councils in Ireland have also published their own Climate Change Strategies, which outline the specific climate objectives for that local authority and associated actions to achieve the objectives. Louth County Council's *Climate Change Adaptation Strategy 2019 -2024* was published by Louth County Council in 2019 and includes the following two goals and associated objectives, which relate to the Built Environment and Development:

- "Goal 2 Infrastructure and Built Environment - Objective: To work towards the objective for a low carbon society";
- "Goal 3 Land-use and development - Objective: To integrate climate action considerations into land-use planning policy and influence positive behaviour."

Meath County Council published their Climate Action Strategy in 2018. There are three relevant and specific targets within the document as follows:

- "Reducing Meath County Councils emissions by 33% by 2020";
- "Reducing CO_2 emissions of the county by at least 40% by 2030"; and
- "Increasing our resilience by adapting to the impacts of climate change."

9.2.2 Construction Phase

9.2.2.1 Air Quality

The current assessment focuses on identifying the existing baseline levels of PM_{10} and $PM_{2.5}$ in the region of the Proposed Development by an assessment of publically available EPA monitoring data. Thereafter, the impact of the construction phase of the Proposed Development on air quality was determined by a qualitative assessment of the nature and scale of dust generating construction activities associated with the Proposed Development.

9.2.2.2 Climate

The impact of the construction phase of the Proposed Development on climate was determined by a qualitative assessment of the nature and scale of greenhouse gas generating construction activities associated with the Proposed Development.

9.2.3 Operational Phase

9.2.3.1 Air Quality

Operational phase traffic has the potential to impact air quality. The UK DMRB guidance (UK Highways Agency, 2019a), states that road links meeting one or more of the following criteria can be defined as being 'affected' by a Proposed Development and should be included in the local air quality assessment. The TII guidance (2011) was based on the previous version of the UK DMRB guidance (UK Highways Agency, 2007) and notes that the TII guidance should be adapted for any updates to the DMRB (see Section 1.1 of *Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes, 2011)* .

- Annual average daily traffic (AADT) changes by 1,000 or more;

- Heavy duty vehicle (HDV) AADT changes by 200 or more;
- A change in speed band;
- A change in carriageway alignment by 5m or greater.

By definition of the criteria above, there are no road links impacted as a result of the Proposed Development. Therefore, no assessment using the DMRB model was required for the Proposed Development as there is no potential for significant impacts to air quality.

9.2.3.2 Climate

The UK Highways Agency has published an updated DMRB guidance document in relation to climate impact assessments *LA 114 Climate* (UK Highways Agency 2019b). The following scoping criteria are used to determine whether a detailed climate assessment is required for a proposed project during the operational stage. If any of the road links impacted by the Proposed Development meet or exceed the below criteria, then further assessment is required.

- A change of more than 10% in AADT;
- A change of more than 10% to the number of heavy duty vehicles; and
- A change in daily average speed of more than 20 km/hr.

None of the road links impacted by the Proposed Development meet the scoping criteria above and therefore a detailed assessment has been scoped out as there is no potential for significant impacts to climate.

9.3 RECEIVING ENVIRONMENT

9.3.1 Meteorological Data

A key factor in assessing temporal and spatial variations in air quality is the prevailing meteorological conditions. Depending on wind speed and direction, individual receptors may experience very significant variations in pollutant levels under the same source strength (i.e. traffic levels) (WHO, 2006). Wind is of key importance in dispersing air pollutants and for ground level sources, such as traffic emissions where pollutant concentrations are generally inversely related to wind speed. Thus, concentrations of pollutants derived from traffic sources will generally be greatest under very calm conditions and low wind speeds when the movement of air is restricted. In relation to PM_{10}, the situation is more complex due to the range of sources of this pollutant. Smaller particles (less than $PM_{2.5}$) from traffic sources will be dispersed more rapidly at higher wind speeds. However, fugitive emissions of coarse particles ($PM_{2.5}$ - PM_{10}) will actually increase at higher wind speeds. Thus, measured levels of PM_{10} will be a non-linear function of wind speed.

The nearest representative weather station collating detailed weather records is Dublin Airport, which is located approximately 32 km south of the site. Dublin Airport met data has been examined to identify the prevailing wind direction and average wind speeds over a five-year period (see Figure 8.1). For data collated during five representative years (2015 – 2019) (Met Eireann, 2020), the predominant wind direction is westerly to south-westerly, with generally moderate wind speeds averaging 5.3 m/s for the period 1981 - 2010.

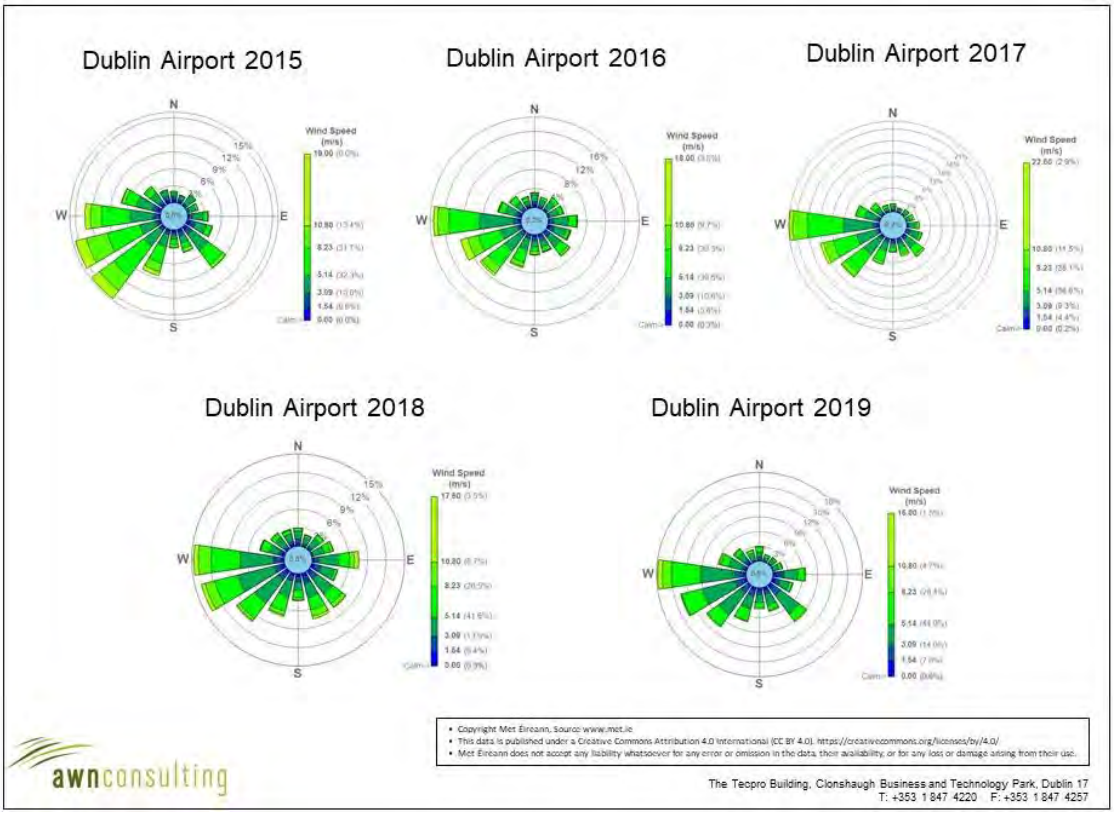

Figure 9.1 Dublin Airport Windrose 2015 – 2019 (MET, 2020)

9.3.2 Baseline Air Quality

The EPA and Local Authorities have undertaken air quality monitoring programs in recent years. The most recent EPA published annual report on air quality "Air Quality In Ireland 2018" (EPA 2019c) details the range and scope of monitoring undertaken throughout Ireland.

As part of the implementation of the Framework Directive on Air Quality (1996/62/EC), four air quality zones have been defined in Ireland for air quality management and assessment purposes as outlined within the EPA document titled 'Air Quality In Ireland 2018' (EPA 2019c). Dublin is defined as Zone A and Cork as Zone B. Zone C is composed of 23 towns with a population of greater than 15,000. The remainder of the country, which represents rural Ireland but also includes all towns with a population of less than 15,000, is defined as Zone D. In terms of air monitoring, the area of the Proposed Development in Drogheda is categorised as Zone C as explained with the EPA document titled 'Air Quality In Ireland 2018' (EPA 2019c).

9.3.2.1 PM_{10}

Continuous PM_{10} monitoring carried out at three Zone C locations in 2018 showed annual mean concentrations ranging from 11 to 16 µg/m^3, with at most 4 exceedances (in Ennis) of the 24-hour limit value of 50 µg/m^3 (35 exceedances are permitted per year) (EPA, 2019c). Long-term data for the period 2014 – 2018 for Ennis and Portlaoise shows that concentrations range from 10 - 21 µg/m^3, suggesting an upper average concentration over the five-year period of no more than 18 µg/m^3. Based on this EPA data, an estimate of the background PM_{10} concentration in the region of the Proposed Development is 18 µg/m^3.

Table 9.2 Background PM_{10} Concentrations In Zone C Locations ($\mu g/m^3$)

Station	Averaging Period [Notes 1,2]	Year				
		2014	2015	2016	2017	2018
Galway	Annual Mean PM_{10} ($\mu g/m^3$)	15	15	15	-	15
	24-hr Mean > 50 $\mu g/m^3$ (days)	0	2	3	-	0
Ennis	Annual Mean PM_{10} ($\mu g/m^3$)	21	18	17	16	16
	24-hr Mean > 50 $\mu g/m^3$ (days)	8	10	12	9	4
Portlaoise	Annual Mean PM_{10} ($\mu g/m^3$)	-	12	12	10	11
	24-hr Mean > 50 $\mu g/m^3$ (days)	-	1	1	0	1

9.3.2.2 $PM_{2.5}$

Continuous $PM_{2.5}$ monitoring carried out at two Zone C locations at Ennis and Bray in 2018 showed annual mean concentrations ranging from 6 to 10 $\mu g/m^3$. Long-term data for the period 2014 – 2018 for Bray and Ennis shows that concentrations range from 5 - 16 $\mu g/m^3$. The $PM_{2.5}/PM_{10}$ ratio in Ennis in 2018 was 0.63. Based on this information, a conservative ratio of 0.7 was used to generate a background $PM_{2.5}$ concentration in the region of the Proposed Development of 12.6 $\mu g/m^3$.

9.3.3 Sensitivity of the Receiving Environment

In line with the UK Institute of Air Quality Management (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction'* (2014) prior to assessing the impact of dust from a Proposed Development the sensitivity of the area must first be assessed as outlined below. Both receptor sensitivity and proximity to proposed works areas are taken into consideration. For the purposes of this assessment, high sensitivity receptors are regarded as residential properties where people are likely to spend the majority of their time.

In terms of receptor sensitivity to dust soiling, there is an office block within 50 m of the proposed works area. Offices and places of work are regarded as medium sensitivity in the IAQM guidance. There are some high sensitivity residential properties in housing developments further to the east of the site (greater than 300m distance). Therefore, the overall sensitivity fo the area to dust soiling impacts is considered **low** based on the IAQM criteria outlined in Table 9.3.

Table 9.3 Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number Of Receptors	Distance from source (m)			
		<20	<50	<100	<350
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

In addition to sensitivity to dust soiling, the IAQM guidelines also outline the assessment criteria for determining the sensitivity of the area to human health impacts. The criteria take into consideration the current annual mean PM_{10} concentration, receptor sensitivity based on type (residential receptors are classified as high sensitivity) and the number of receptors affected within various distance bands from the construction works. A conservative estimate of the current annual mean PM_{10} concentration in the vicinity of the Proposed Development is estimated to be 18 $\mu g/m^3$ and there is an office block located within 50 m of the proposed

construction works. Based on the IAQM criteria outlined in Table 9.4, the worst case sensitivity of the area to human health is considered to be **low**.

Table 9.4 Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<200
High	< 24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	< 24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	< 24 µg/m^3	>1	Low	Low	Low	Low

9.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

9.4.1 Construction Phase

The Proposed Development is described in Chapter 2. The key civil engineering works that will have a potential impact on air quality and climate during construction are summarised below:

(i) During construction, an amount of soil will be generated as part of the site preparation works and during excavation for building foundations and for the installation of ducting for the cable installations.
(ii) Infilling and landscaping will be undertaken.
(iii) Temporary storage of construction materials
(iv) Construction traffic accessing the site will emit air pollutants and greenhouse gases during transport.

As outlined in Section 9.6, a dust minimisation plan will be formulated for the construction phase of the Proposed Development to ensure no dust nuisance occurs at nearby sensitive receptors.

9.4.2 Operational Phase

During the operational phase, traffic accessing the site for maintenance purposes has the potential to impact on air quality and climate. However, this traffic will not be of the magnitude to cause a significant impact. There is a single generator (back up) in the Proposed Development but this has been scoped out as it is less than 1 MW.

9.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

9.5.1 Construction Phase

9.5.1.1 Air Quality

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust. While construction dust tends to be deposited within 350m of a construction site, the majority of the deposition occurs within the first 50m. The extent of any dust generation depends on the nature of the dust (soils, peat, sands, gravels, silts etc.) and the nature of the construction activity. In addition, the potential for dust dispersion and deposition depends on local meteorological factors such as rainfall, wind speed and wind direction.

It is important to note that the potential impacts associated with the construction phase of the Proposed Development are short-term in nature. When the dust minimisation measures detailed in the mitigation section (see Section 9.6) of this chapter are implemented, fugitive emissions of dust from the site will not be significant and will pose no nuisance at nearby receptors.

In order to determine the level of dust mitigation required during the proposed works, the potential dust emission magnitude for each dust generating activity needs to be taken into account, in conjunction with the previously established sensitivity of the area (see Section 9.3.3). The major dust generating activities are divided into four types within the IAQM guidance to reflect their different potential impacts. These are:

- Demolition;
- Earthworks;
- Construction; and
- Trackout (movement of heavy vehicles).

Demolition

There are no demolition activities associated with the Proposed Development. Therefore, there is no demolition impact predicted as a result of the works.

Earthworks

Earthworks primarily involve excavating material, loading and unloading of materials, tipping and stockpiling activities. Activities such as levelling the site and landscaping works are also considered under this category. The dust emission magnitude from earthworks can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** Total site area > 10,000 m^2, potentially dusty soil type (e.g. clay which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds > 8 m in height, total material moved >100,000 tonnes;

- **Medium:** Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4 – 8 m in height, total material moved 20,000 – 100,000 tonnes;

- **Small:** Total site area < 2,500 m^2, soil type with large grain size (e.g. sand), < 5 heavy earth moving vehicles active at any one time, formation of bunds < 4 m

in height, total material moved < 20,000 tonnes, earthworks during wetter months.

The dust emission magnitude for the proposed earthwork activities can be classified as medium as the total material moved (both excavations and infilling works) will be between 20,000 – 100,00 tonnes.

The sensitivity of the area, as determined in Section 9.3.3, is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 9.5, this results in an overall **low risk** of temporary dust soiling impacts and temporary human health impacts as a result of the proposed earthworks activities.

Table 9.5 Risk of Dust Impacts – Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Construction

Dust emission magnitude from construction can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** Total building volume > 100,000 m^3, on-site concrete batching, sandblasting;
- **Medium:** Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on-site concrete batching;
- **Small:** Total building volume < 25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

The dust emission magnitude for the proposed construction activities can be classified as small as a worst-case as the total building volume and volume of trench for the cabling will be significantly less than 25,000 m^3.

The sensitivity of the area is combined with the dust emission magnitude for each dust generating activity to define the risk of dust impacts in the absence of mitigation. As outlined in Table 9.6, this results in an overall **negligible risk** of temporary dust soiling impacts and temporary human health impacts as a result of the proposed construction activities.

Table 9.6 Risk of Dust Impacts – Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Trackout

Factors which determine the dust emission magnitude are vehicle size, vehicle speed, number of vehicles, road surface material and duration of movement. Dust emission magnitude from trackout can be classified as small, medium or large based on the definitions from the IAQM guidance as transcribed below:

- **Large:** > 50 HGV (> 3.5 t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length > 100 m;
- **Medium:** 10 - 50 HGV (> 3.5 t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 - 100 m;
- **Small:** < 10 HGV (> 3.5 t) outward movements in any one day, surface material with low potential for dust release, unpaved road length < 50 m.

The dust emission magnitude for the proposed trackout can be classified as small, as at worst-case peak periods there will be at most 10 outward HGV movements per day.

As outlined in Table 9.7, this results in an overall **negligible risk** of temporary dust soiling impacts and temporary human health impacts as a result of the proposed trackout activities.

Table 9.7 Risk of Dust Impacts – Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

9.5.1.2 Summary of Dust Emission Risk

The risk of dust impacts as a result of the Proposed Development are summarised in Table 9.8 for each activity. The magnitude of risk determined is used to prescribe the level of site specific mitigation required for each activity in order to prevent significant impacts occurring.

While there is a worst case low risk of dust soiling and human health impacts associated with the proposed works, best practice dust mitigation measures will be implemented to ensure there are no impacts at nearby sensitive receptors. When the dust mitigation measures detailed in the mitigation section of this chapter (Section 9.6) are implemented, fugitive emissions of dust from the site will be insignificant and pose no nuisance at nearby receptors.

Table 9.8 Summary of Dust Impact Risk used to Define Site-Specific Mitigation

Potential Impact	Dust Emission Magnitude			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	-	Low Risk	Negligible Risk	Negligible Risk
Human Health	-	Low Risk	Negligible Risk	Negligible Risk

9.5.1.3 Climate

Construction traffic would be expected to be the dominant source of greenhouse gas emissions as a result of the Proposed Development. Construction vehicles and machinery will give rise to CO_2 and N_2O emissions during construction of the Proposed Development.

Due to the short duration and nature of the construction activities, CO_2 and N_2O emissions from construction vehicles and machinery will have a short-term and imperceptible impact on climate.

9.5.2 Operational Phase

9.5.2.1 Air Quality & Climate

Vehicles accessing the site for maintenance works have the potential to impact on air quality and climate. However, the volume of vehicles accessing the site will be significantly below the 1,000 AADT stipulated in the UK DMRB guidance in Section 9.2.3.1 and thus, a modelling assessment is not required and impacts are considered neutral. The single generator is < 1MW. In addition, during the operational stage, the cables will be buried underground and will have no impact on air quality or climate.

9.5.3 Do Nothing Scenario

Under the Do Nothing Scenario, no construction works will take place and the previously identified impacts of fugitive dust and particulate matter emissions and emissions from equipment and machinery will not occur. The ambient air quality at the site will remain as per the baseline and will change in accordance with trends within the wider area (including influences from new developments in the surrounding industrial estates, changes in road traffic, etc.). Therefore, this scenario can be considered ***neutral*** in terms of both air quality and climate.

9.6 REMEDIAL AND MITIGATION MEASURES

9.6.1 Construction Phase

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK and the USA based on the following publications:

- 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014);
- 'Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings' (The Scottish Office, 1996);
- 'Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance' (UK Office of Deputy Prime Minister, 2002);
- 'Controlling Particles, Vapours & Noise Pollution From Construction Sites' (BRE, 2003);
- 'Fugitive Dust Technical Information Document for the Best Available Control Measures' and the USA (USEPA, 1997); and
- 'Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition' (periodically updated) (USEPA, 1986).

In advance of work starting on site, the works contractor will prepare a detailed Construction Environmental Management Plan (CEMP). The CEMP will set out the overarching vision of how the construction of the Proposed Development will be managed in a safe and organised manner by the Contractor. The CEMP will be a live document. It will set out requirements and standards that must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent planning conditions relevant to the Proposed Development.

9.6.1.1 Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design and effective control strategies.

At the construction planning stage, the siting of activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance (see Figure 8.1 for the wind rose for Dublin Airport). As the prevailing wind is predominantly, westerly to south-westerly, locating construction compounds and storage piles downwind (to the east or northeast) of sensitive receptors will minimise the potential for dust nuisance to occur at sensitive receptors.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (UK Office of Deputy Prime Minister (2002), BRE (2003)). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care should be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions near the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods were care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- The Principal Contractor or equivalent must monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;
- During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;
- The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also include head/regional office contact details;
- It is recommended that community engagement be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;
- A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;
- It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are described below.

9.6.1.2 Site Roads / Haulage Routes

Movement of construction trucks along site roads (particularly unpaved roads) can be a significant source of fugitive dust if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80% (UK Office of Deputy Prime Minister, 2002).

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved site roads;
- Access gates to the site will be located at least 10m from sensitive receptors where possible;
- Bowsers or suitable watering equipment will be available during periods of dry weather throughout the construction period. Research has found that watering can reduce dust emissions by 50% (USEPA, 1997). Watering will be conducted during sustained dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use;
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

9.6.1.3 Land Clearing / Earth Moving

Land clearing / earth-moving works during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, watering will be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust;
- During periods of very high winds (gales), activities likely to generate significant dust emissions will be postponed until the gale has subsided.

9.6.1.4 Storage Piles

The location and moisture content of storage piles are important factors which determine their potential for dust emissions.

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the site. Where possible storage piles will be located downwind of sensitive receptors;
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency (UK Office of Deputy Prime Minister, 2002);
- Where feasible, hoarding will be erected around site boundaries to reduce visual impact. This will also have an added benefit of preventing larger particles from impacting on nearby sensitive receptors.

9.6.1.5 Site Traffic on Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:

- Vehicles delivering or collecting material with potential for dust emissions shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust;
- At the main site traffic exits, a wheel wash facility will be installed. All trucks leaving the site must pass through the wheel wash. In addition, public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary.

9.6.1.6 Summary of Dust Mitigation Measures

The pro-active control of fugitive dust will ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the satisfactory performance of the contractor. The key features with respect to control of dust will be:

- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the dust minimisation plan can be regularly monitored and assessed; and
- The specification of effective measures to deal with any complaints received.

9.6.2 Operational Phase

Apart from an emission from a single 1MW backup generator, there are no predicted impacts for the operational phase of the Proposed Development and therefore, no additional mitigation measures are proposed.

9.7 RESIDUAL IMPACTS OF THE PROPOSED DEVELOPMENT

9.7.1 Construction Phase

9.7.1.1 Air Quality

When the dust mitigation measures detailed in the mitigation section (section 8.6.1) of this report are implemented, fugitive emissions of dust and particulate matter from the site will be ***short term*** and ***imperceptible*** in nature, posing no nuisance at nearby receptors.

9.7.1.2 Climate

Based on the scale and temporary nature of the construction works and the intermittent use of equipment, the potential impact on climate change and transboundary pollution from the Proposed Development is deemed to be ***short term*** and ***imperceptible*** in relation to Ireland's obligations under the EU 2020 target.

9.7.1.3 Human Health

Best practice mitigation measures are proposed for the construction phase of the Proposed Development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the Proposed Development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the Proposed Development is likely to be ***short term*** and ***imperceptible*** with respect to human health.

9.7.2 Operational Phase

9.7.2.1 Air Quality & Climate

There are no predicted impacts to air quality or climate during the operational phase of the Proposed Development. Therefore, the operational phase is considered ***neutral*** for both air quality and climate.

If the mitigation measures outlined in Section 8.6 are implemented, there will be no residual impacts of significance on air quality or climate from the construction or operational phases of the Proposed Development.

9.8 CUMULATIVE IMPACTS

There is the potential for cumulative dust impacts to any nearby sensitive receptors. The dust mitigation measures outlined in Section 9.6.1 to be applied during construction will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality and climate associated with the construction phase of the Proposed Development and the permitted and Proposed Developments on the site and / or simultaneous construction of any other proposed or Permitted Developments within 350m of the site are deemed ***short-term*** and ***imperceptible***.

There will be no emissions to air quality or climate during the operational phase of the 110kV transmission line, 49kVA cable installation, the GIS substation or new cable bays. Therefore, there are no cumulative impacts on air quality or climate from the operational phase of the Proposed Development.

Indirect air emissions from electricity power generating stations are covered under the individual licences for these sites which are monitored and enforced by the EPA, ensuring emissions do not impact on ambient air quality.

9.9 REFERENCES

BRE (2003) Controlling Particles, Vapours & Noise Pollution From Construction Sites

DEHLG (2004) National Programme for Ireland under Article 6 of Directive 2001/81/EC for the Progressive Reduction of National Emissions of Transboundary Pollutants by 2010

DEHLG (2007) Update and Revision of the National Programme for Ireland under Article 6 of Directive 2001/81/EC for the Progressive Reduction of National Emissions of Transboundary Pollutants by 2010

EPA (2006) Environmental Management Guidelines - Environmental Management in the Extractive Industry (Non-Scheduled Minerals)

EEA (2014) NEC Directive Status Reports 2013

EPA (2015) Advice Notes for Preparing Environmental Impact Statements – Draft September 2015

EPA (2017) Guidelines on the Information to be contained in Environmental Impact Statements - Draft August 2017

EPA (2019a) Air Quality Monitoring Report 2019 (& previous annual reports)

EPA (2019b) Ireland's Final Greenhouse Gas emissions 1990-2017

EPA (2019c) Ireland's Greenhouse Gas Emissions Projections 2018-2040

EPA (2020) EPA Website: http://www.epa.ie/whatwedo/monitoring/air/

EPA (2020) Ireland's Transboundary Gas Emissions 1990 – 2030

ERM (1998) Limitation and Reduction of CO_2 and Other Greenhouse Gas Emissions in Ireland

European Council (2014) European Council (23 and 24 October 2014) Conclusions on 2030 Climate and Energy Policy Framework, SN 79/14

German VDI (2002) Technical Guidelines on Air Quality Control – TA Luft

IAQM (2014) Guidance on the Assessment of Dust from Demolition and Construction

Met Éireann (2019) Met Eireann website: https://www.met.ie/

The Scottish Office (1996) Planning Advice Note PAN50 Annex B: Controlling The Environmental Effects Of Surface Mineral Workings Annex B: The Control of Dust at Surface Mineral Workings

UK Office of Deputy Prime Minister (2002) Controlling the Environmental Effects of Recycled and Secondary Aggregates Production Good Practice Guidance

UN Framework Convention on Climate Change (1999) Ireland - Report on the in-depth review of the second national communication of Ireland

UN Framework Convention on Climate Change (2012) Doha Amendment to the Kyoto Protocol

UN Framework Convention on Climate Change (FCCC) (1997) Kyoto Protocol To The United Nations Framework Convention On Climate Change

USEPA (1997) Fugitive Dust Technical Information Document for the Best Available Control Measures

10.0 NOISE & VIBRATION

10.1 INTRODUCTION

This EIA Report has been prepared to accompany a planning permission application for the Proposed Development of a substation and associated gird connections and associated ancillary development on lands at a site located off Donore Road, north of Junction 9 of the M1 motorway as described in Chapter 2 of this EIA Report. The subject site is illustrated in Figure 10.1 below.

The nearest residential noise sensitive locations are located to the east of the site in the Cedarfield estate with further private residences located to the north in The Downs estate. A number of private residences are also located to the south west on the far side of the M1 junction. The nearest commercial units are an office building located to the east on IDA lands and other commercial units on the opposite side of the Donore Road. A section of the northern boundary of the site abuts a section of the undeveloped lands which is understood to be zoned for commercial development.

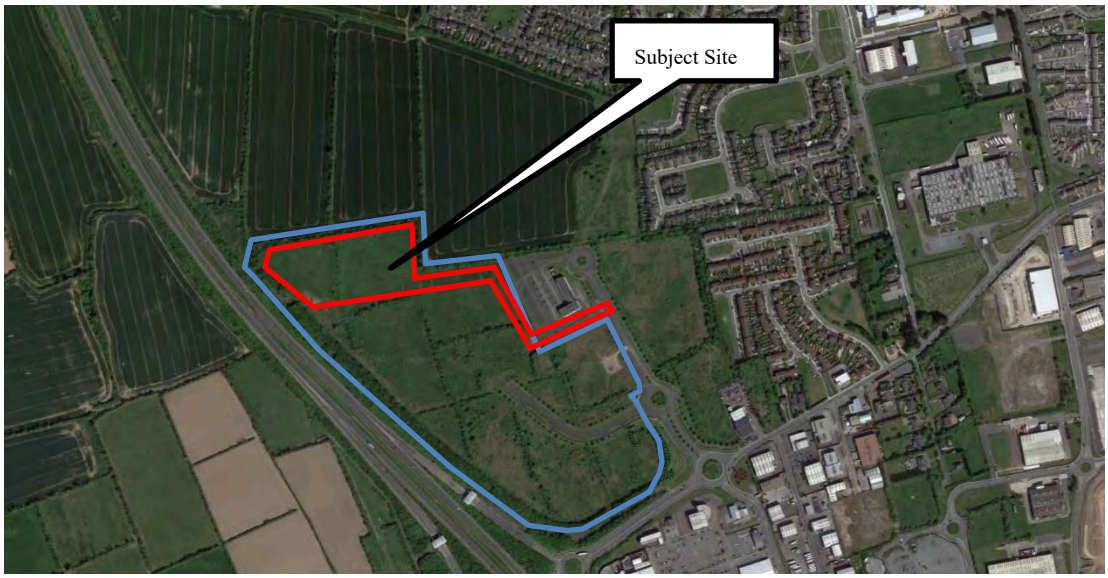

Figure 10.1 Site Location and Context

This Proposed Development has been assessed and discussed in terms of potential noise and vibration impacts on the surrounding environment.

10.2 METHODOLOGY

10.2.1 Proposed Approach

The following methodology has been adopted for this assessment:

- review appropriate guidance, typical local authority planning conditions, etc. in order to identify appropriate noise criteria for the site operations;
- carry out noise monitoring at a number of locations (e.g. in the vicinity of nearest sensitive properties/boundaries) to identify existing levels of noise in the vicinity of the development;

- construction noise calculations associated with the key construction activities to consider the potential noise impact of the Proposed Development; and
- comment on predicted noise levels against the appropriate criteria and existing noise levels and outline required mitigation measures (if any).

Appendix 10.1 of this document presents a glossary of the acoustic terminology used throughout this document. In the first instance it is considered appropriate to review some basic fundamentals of acoustics.

10.2.2 Fundamentals of Acoustics

In order to provide a broader understanding of some of the technical discussion in this report, this section provides a brief overview of the fundamentals of acoustics and the basis for the preparation of this noise assessment.

A sound wave travelling through the air is a regular disturbance of the atmospheric pressure. These pressure fluctuations are detected by the human ear, producing the sensation of hearing. In order to take account of the vast range of pressure levels that can be detected by the ear, it is convenient to measure sound in terms of a logarithmic ratio of sound pressures. These values are expressed as Sound Pressure Levels (SPL) in decibels (dB).

The audible range of sounds expressed in terms of Sound Pressure Levels is 0dB (for the threshold of hearing) to 120dB (for the threshold of pain). In general, a subjective impression of doubling of loudness corresponds to a tenfold increase in sound energy which conveniently equates to a 10dB increase in SPL. It should be noted that a doubling in sound energy (such as may be caused by a doubling of traffic flows) increases the SPL by 3dB.

The frequency of sound is the rate at which a sound wave oscillates and is expressed in Hertz (Hz). The sensitivity of the human ear to different frequencies in the audible range is not uniform. For example, hearing sensitivity decreases markedly as frequency falls below 250Hz. In order to rank the SPL of various noise sources, the measured level has to be adjusted to give comparatively more weight to the frequencies that are readily detected by the human ear. Several weighting mechanisms have been proposed but the ‘A-weighting’ system has been found to provide one of the best correlations with perceived loudness. SPL’s measured using ‘A-weighting’ are expressed in terms of dB(A). An indication of the level of some common sounds on the dB(A) scale is presented in Figure 10.2.

The ‘A’ subscript denotes that the sound levels have been A-weighted. The established prediction and measurement techniques for this parameter are well developed and widely applied. For a more detailed introduction to the basic principles of acoustics, reference should be made to an appropriate standard text.

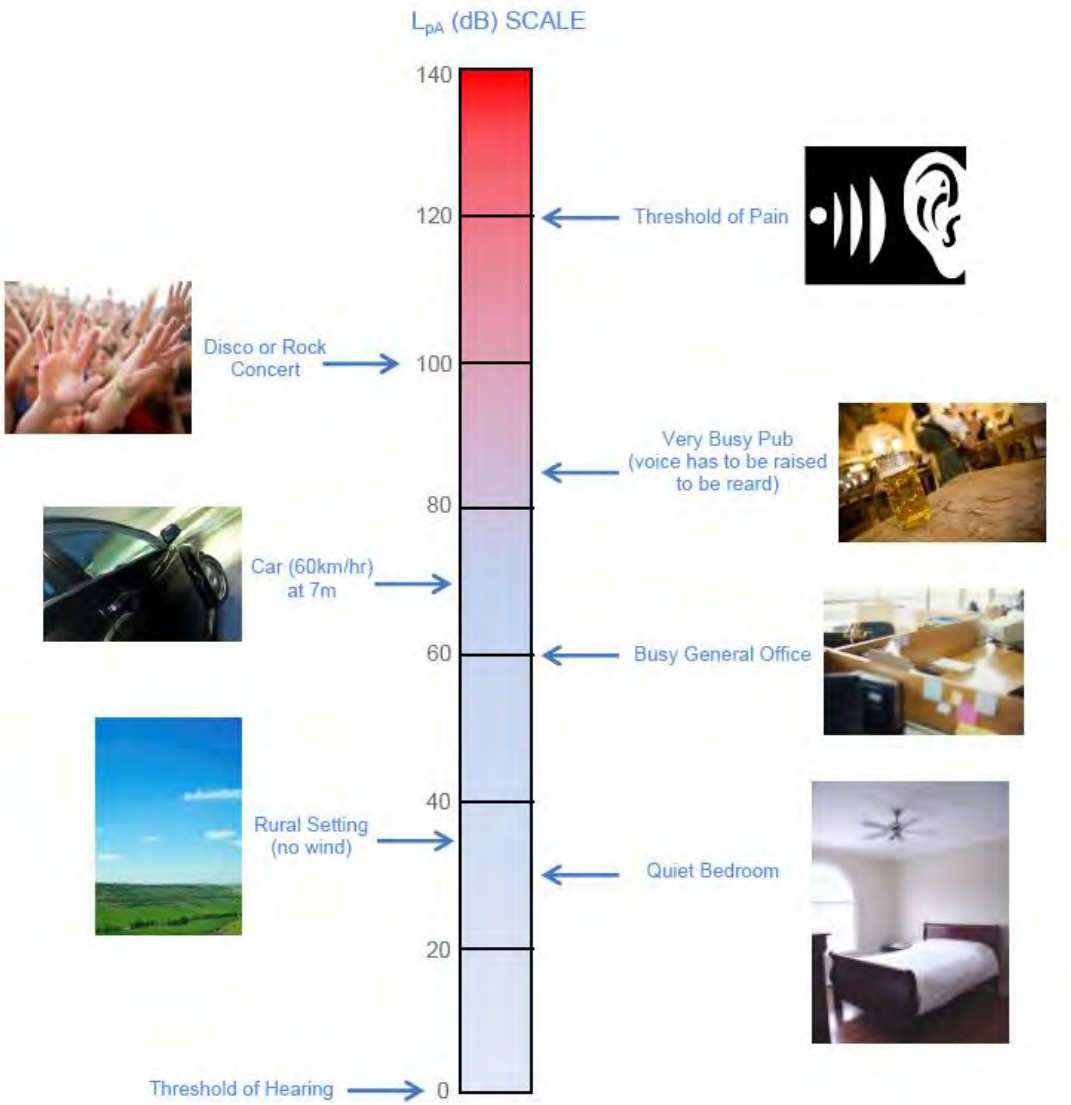

Figure 10.2 dB(A) Scale & Indicative Noise Levels – (EPA: Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4 – 2012))

10.2.3 Significance of Impacts

The significance of noise and vibration impacts has been assessed in accordance with the EPA's *Draft Guidelines on the Information to be contained in Environmental Impact Assessment Reports* 2017 and the EPA's Draft *Advice Notes for Preparing Environmental Impact Statements* 2015, see Tables 10.1 to 10.3 below. As these guidelines do not quantify the impacts in decibel terms, further reference has been made to the '*Guidelines for Environmental Noise Impact Assessment*' produced by the Institute of Environmental Management and Assessment (IEMA) (2014).

With regard to the quality of the impact, ratings may have positive, neutral or negative applications where:

Table 10.1 Quality of Potential Effects

Quality of Effects	Definition
Negative	A change which reduces the quality of the environment (e.g. by causing a nuisance).
Neutral	No effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error.
Positive	A change that improves the quality of the environment (e.g. by removing a nuisance).

The significance of an effect on the receiving environment are described as follows:

Table 10.2 Significance of Effects

Significance of Effects on the Receiving Environment	Description of Potential Effects
Imperceptible	An effect capable of measurement but without significant consequences.
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics.

The duration of effects as described in the Draft EPA Guidelines are:

Table 10.3 Duration of Effects

Duration of Impact	Definition
Momentary	Effects lasting from seconds to minutes
Brief	Effects lasting less than a day
Temporary	Effects lasting one year or less
Short-term	Effects lasting one to seven years
Medium-term	Effects lasting seven to fifteen years
Long-term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years
Reversible	Effects that can be undone, for example through remediation or restoration

10.2.4 Construction Phase Guidance

Criteria for Rating Noise Impacts

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the *British*

Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise.

The approach adopted in BS5228 – 1 calls for the designation of a noise sensitive location into a specific category (A, B or C) based on existing ambient noise levels in the absence of construction noise. This then sets a threshold noise value that, if exceeded at this location, indicates a significant noise impact is associated with the construction activities.

BS5228 – 1 sets out guidance on permissible noise levels relative to the existing noise environment. Table 10.4 sets out the values which, when exceeded, signify a significant effect at the facades of residential receptors as recommended by BS 5228 – 1. These are construction noise levels only and not the cumulative noise level due to construction plus existing ambient noise.

Table 10.4 Example Threshold of Significant Effect at Dwellings

Assessment category and threshold value period (L_{Aeq})	Threshold value, in decibels (dB)		
	Category A Note A	Category B Note B	Category C Note C
Night-time (23:00 to 07:00hrs)	45	50	55
Evenings and weekends Note D	55	60	65
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	65	70	75

Note A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are less than these values.
Note B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are the same as category A values.
Note C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5dB) are higher than category A values.
Note D) 19:00 – 23:00 weekdays, 13:00 – 23:00 Saturdays and 07:00 – 23:00 Sundays.

It should be noted that this assessment method is only valid for residential properties.

For the appropriate periods (i.e. daytime, evening and night-time) the ambient noise level is determined and rounded to the nearest 5dB. Baseline monitoring carried out as part of this assessment would indicate that the categories detailed in Table 10.5 are appropriate in terms of the nearest noise sensitive locations being considered in this instance.

Table 10.5 Rounded Baseline Noise Levels and Associated Categories

Period	Baseline Noise Category	Construction Noise Threshold Value $L_{Aeq,1hr}$ (dB)
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	B	65
Evening (19:00 to 23:00hrs)	B	55
Night time (23:00 to 07:00hrs)	B	45

See Section 10.5.1 for the assessment in relation to this site. If the construction noise level exceeds the appropriate category value, then a significant effect is deemed to occur.

This assessment process determines if a significant construction noise impact is likely. Notwithstanding the outcome of this assessment, the overall acceptable levels of construction noise are set out in the Transport Infrastructure Ireland (TII) publication *Guidelines for the Treatment of Noise and Vibration in National Road*

Schemes[1], which should not be exceeded at noise sensitive locations during the construction phase of the Proposed Development. Table 10.6 sets out these levels.

Table 10.6 Maximum Permissible Noise Levels at the Facade of Dwellings during Construction

Days and Times	Noise Levels (dB re. $2x10^{-5}$ Pa)	
	$L_{Aeq(1hr)}$	L_{Amax}
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00 to 16:30hrs	65	75
Sundays & Bank Holidays 08:00 to 16:30hrs	60*	65*

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

Therefore, based on the above the following construction noise criteria are proposed for the site in relation to day to day works during the stated construction hours:

70dB $L_{Aeq,1hr}$ at noise sensitive location
75dB $L_{Aeq,1hr}$ at commercial property

In exceptional circumstances there may be a requirement that certain construction works are carried out during night-time periods. In these instances, the relevant evening (60dB L_{Aeq1hr}) and night-time (50dB $L_{Aeq,1hr}$) will apply.

Criteria for Rating Vibration Impacts

Vibration standards come in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In both instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at around 0.5mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short duration. For example, rock breaking and piling, two of the primary sources of vibration during construction, are typically tolerated at vibration levels up to 12mm/s and 5mm/s respectively. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant of such activities during the night.

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*, and;
- British Standard BS 5228-2: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Vibration*.

BS 7385 states that there should typically be no cosmetic damage if transient vibration does not exceed 15mm/s at low frequencies rising to 20mm/s at 15Hz and 50mm/s at 40Hz and above. These guidelines relate to relatively modern buildings and should be reduced to 50% or less for more critical buildings.

[1] *Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, 25 October 2004*, Transport Infrastructure Ireland

BS 5228 recommends that, for soundly constructed residential property and similar structures that are generally in good repair, a threshold for minor or cosmetic (i.e. non-structural) damage should be taken as a peak component particle velocity (in frequency range of predominant pulse) of 15mm/s at 4Hz increasing to 20mm/s at 15Hz and 50mm/s at 40Hz and above. Below these values minor damage is unlikely. Where continuous vibration is such as to give rise to dynamic magnification due to resonance, the guide values may need to be reduced by up to 50%. BS 5288-2 also comments that important buildings which are difficult to repair might require special consideration on a case by case basis.

The TII document *Guidelines for the Treatment of Noise and Vibration in National Road Schemes* also contains information on the permissible construction vibration levels as follows:

Table 10.7 Allowable Vibration during Construction Phase

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

10.2.5 Operational Phase – Noise Guidance

Relevant Planning Condition

The main data centre development that the Proposed Development will support has the following day to day operational noise criteria condition associated with it:

15 f. During the day to day operational phase noise levels when measured at noise sensitive receptors as identified in the EIAR shall not exceed the following limits:

55dB $L_{Aeq,15min}$ (daytime)
50dB $L_{Aeq,15min}$ (evening)
45dB $L_{Aeq,15min}$ (night time)

It is proposed to adopt these criteria for the cumulative noise levels associated with the permitted data centre and the Proposed Development under consideration here.

Assessment of Significance

The '*Guidelines for Environmental Noise Impact Assessment*' produced by the Institute of Environmental Management and Assessment (IEMA) (2014) have been referenced in order to categorise the potential effect of changes in the ambient noise levels during the operational phases of the Proposed Development.

The guidelines state that for any assessment, the potential significance should be determined by the assessor, based upon the specific evidence and likely subjective response to noise. Due to varying factors which effect human response to environmental noise (prevailing environment, noise characteristics, time periods, duration and level etc.) assigning a subjective response must take account of these factors.

The scale adopted in this assessment is shown in Table 10.8 below is based on an example scale within the IEMA guidelines. The corresponding significance of impact presented in the Draft '*Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*' (EPA, 2017) is also presented.

Table 10.8 Noise Impact Scale – Operational Noise Sources

Noise Level Change dB(A)	Subjective Response	Long Term Impact Classification (IEMA, 2014)	Impact Guidelines on the Information to be contained in EIA Report's (EPA)
≥ 0	No change	Negligible	Imperceptible
≥ 0 and < 3	Barely perceptible		Not Significant
≥ 3 and < 5	Noticeable	Minor	Slight – Moderate
≥ 5 and < 10	Up to a doubling or halving of loudness	Moderate	Moderate – Significant
≥10	More than a doubling or halving of loudness	Major	Significant – Profound

The significance table reflects the key benchmarks that relate to human perception of sound. A change of 3dB(A) is generally considered to be the smallest change in environmental noise that is perceptible to the human ear. A 10dB(A) change in noise represents a doubling or halving of the noise level. The difference between the minimum perceptible change and the doubling or halving of the noise level is split to provide greater definition to the assessment of changes in noise level.

It is considered that the ratings specified in the above table provide a good indication as to the likely significance of changes on noise levels in this case and have been used to assess the impact of operational noise.

Commercial Properties

A number of commercial / industrial properties are located in the vicinity of the site. In terms of noise emissions from the site it is considered that an appropriate noise criterion at these locations is 55dB $L_{Aeq,15min}$. This criterion has been derived with consideration of BS 8233:2014 *Guidance on sound insulation and noise reduction for buildings* which recommends that for *Study and work requiring concentrations* in an *Executive office* a design range of 35 to 40 dB L_{Aeq} is desirable internally. Arriving at an external noise level of 55dB $L_{Aeq,15min}$ would ensure that this range of noise levels internally will be achieved.

Recommended Criteria

Following review of relevant guidance, the following noise criteria are proposed for the Proposed Development:

55dB $L_{Aeq,15min}$ (daytime)
50dB $L_{Aeq,15min}$ (evening)
45dB $L_{Aeq,15min}$ (night time)

Note plant noise emissions are to be designed and plant selected such that they are not tonal and do not have impulsive characteristics at the nearest noise sensitive locations.

10.2.6 Operational Phase – Vibration Guidance

Criteria for Rating Vibration Impacts

There are no vibration emissions associated with the operation of the Proposed Development. Consequently, there is no requirement to set operational vibration criteria.

10.2.7 Forecasting Methods

Construction noise calculations have been conducted generally in accordance with BS 5228: 2009+A1:2014: *Code of practice for noise control on construction and open sites - Noise.*

Prediction calculations for operational building services noise, car park activity and vehicle movements on site have been conducted generally in accordance with ISO 9613 (1996): *Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation.*

Changes in road traffic noise on the local road network have been considered using prediction guidance contained within *Calculation of Road Traffic Noise (CRTN)* issued by the Department of Transport in 1988.

10.3 RECEIVING ENVIRONMENT

A series of noise surveys have been undertaken as part of the Environmental Impact Assessment Report preparation for the Proposed Development. Table 10.10 reviews the findings of these surveys. Full details of the noise monitoring campaign are presented in Appendix 10.2.

10.3.1 Survey & Review Locations

Figure 10.3 illustrates the noise sensitive locations in the vicinity of the Proposed Development site at which noise monitoring was undertaken as part of the assessment prepared for the permitted data centre.

Figure 10.3 Noise Sensitive Locations

Location A Located in the vicinity of a private residence located to the south west of the development lands on the opposite side of the M1 junction.

Location B Located beyond the north eastern boundary of the site in the proximity of noise sensitive locations situated within The Downs residential estate. Note vehicles shown in photo were not present during the survey periods.

Location C Located beyond the eastern boundary of the site in the proximity of noise sensitive locations situated within The Cedarfield residential estate.

10.3.2 Comment on Noise Levels

Road traffic noise, both distant and local was noted as the most significant source of noise and typically dictated ambient noise levels (i.e. $L_{Aeq,T}$) at the nearest noise sensitive locations to the site during daytime and night-time periods.

Background noise levels (e.g. $L_{A90,T}$) at the various locations were typically dictated by local and distant road traffic noise. These levels reduced as would be expected into the early hours of the morning when the volume of traffic on the local and wider road network reduced.

Table 10.9 reviews the typical ambient and background noise levels at the monitoring locations discussed above.

Table 10.9 Review of Typical Noise Levels

Location	Period	Start Time	Measured Noise Levels (dB re. $2x10^{-5}$ Pa)	
			L_{Aeq} (Ambient)	L_{AF90} (Background)
A	Day	10:25	62	59
		11:29	62	59
		12:30	63	60
		21:50	58	53
	Night	23:30	56	51
		00:35	52	46
B	Day	10:48	50	49
		11:49	48	45
		12:51	49	46
		22:11	47	44
	Night	23:52	46	41
		00:56	41	38
C	Day	11:09	49	47
		12:10	51	47
		13:11	49	47
		22:30	47	45
	Night	00:13	43	40
		01:17	42	37

Traffic noise from the M1 and other roads in the stud area dictated noise levels at all locations during the survey periods in question. These typical noise levels were considered when discussing appropriate noise criteria in relation to the permitted data centre as discussed in Section 10.2.5. As noted above, the same criteria adopted for the cumulative noise levels associated with the permitted data centre and the Proposed Development under consideration here ensures a robust criteria for the overall development.

10.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

A variety of items of plant will be in use for the purposes of site preparation, construction and site works. There will be vehicular movements to and from the site that will make use of existing roads. Due to the nature of these activities, there is potential for generation of high levels of noise. Underground lines will be installed using a methodology similar to the one detailed below:

- The area where excavations are planned will be surveyed, prior to the commencement of works, with a cable avoiding tool and all existing underground services will be identified;
- A team consisting of a rubber tracked excavator, a dumper and a tractor and stone cart with side-shoot will dig the trench and lay approximately 120m of the underground cabling per day;
- The excavators will open a trench, the trench will be a maximum of 600mm wide;
- Clay plugs will be installed at 50m intervals to prevent the trench becoming a conduit for surface water runoff;
- The excavated material will be loaded into the dumpers to be transported to a designated temporary stockpiling area to be reused as backfilling material where appropriate;
- Once the trench has been excavated, a base layer of blinding will be installed by the tractor and cart and compacted by the excavators;
- The ducting will then be placed in the trench as per relevant specifications;
- Blinding will be installed above the cable ducting and compacted.
- The remainder of the trench will be backfilled with granular material and compacted, and;
- The trench will be reinstated as per existing surfacing i.e. landscaped in greenfield area where appropriate.

Construction activities will mostly be carried out during normal daytime working hours. Normal construction hours will be specified by planning conditions of a grant of permission for the Proposed Development, or by the local authority.

Once operational, there will be no significant off-site noise emissions from the operation of the cable installations or 110kV substations and associated cable bays.

These issues are discussed in detailed in the following sections.

10.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

10.5.1 Construction Phase

Construction noise predictions have been carried out using guidance set out in British Standard *BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise*.

Construction works associated with the underground cable will be temporary in duration. It is estimated that the civil works will take approximately 3 weeks, with a further 2 weeks estimated for cable installation, jointing and testing and reinstatement.

Table 10.10 outlines the noise levels associated with typical construction noise sources assessed in this instance along with typical sound pressure levels from *BS 5228 – 1: 2009+A1:2014* at various distances from these works.

Table 10.10 Indicative Noise Levels from Construction Plant at Various Distances from the cable installation Works

Item (BS 5228 Ref.)	Highest Predicted Noise Level at Stated Distance from Edge of Works (dB $L_{Aeq,1hr}$)			
	20m	40m	60m	100m
Pneumatic breaker (C.8.12)	66	60	56	52
Wheeled loader (C.3.51)*	62	56	52	48
Tracked excavator (C.3.43)*	63	57	53	49
Dozer (C.3.30)*	64	58	54	50
Dump truck (C.3.60)*	60	54	50	46
Asphalt Spread (C.8.24)	70	64	60	56
Compressor (C.7.27)	61	55	51	47
Road Roller (C.3.114)	65	59	55	51
HGV Movements (10 per hour)	53	50	49	46

***Note *** Assume noise control measures as outlined in Table B1 of BS 5228 – 1 (i.e. fit acoustic exhaust).

Construction works associated with cable works will be the dominant source of noise at the nearest noise sensitive locations when they occur. Where this scenario occurs, it should be noted that at an assumed cable laying rate of 100m per day, the equipment associated with the cable works would be expected to be within 20 to 30m of a specific property for a maximum of some 6 hours if the construction works pass directly in front of the property. This limited time frame for construction works in the vicinity of a specific property results in a brief significant impact.

Where a property is within such proximity to the works and the noise criterion outlined here is expected to be exceeded for a brief period, the contractor shall be contractually obliged to advise the residents in advance of the works of date, time and duration of the expected works. The contractor will establish channels of communication between the contractor/developer, Local Authority and residents. Once sufficient notice of works and their timeframe are communicated to affected residents and suitable mitigation is implemented, the overall impact will be significantly reduced.

The noise levels presented in Table 10.10 are within the weekday daytime construction noise limit values shown in Table 10.6, at distances of 20m or greater from the works. At distances greater than 20m from the works, the construction activities are predicted to be below the 70dB $L_{Aeq,1hr}$ construction noise criterion adopted. A significant effect is therefore not predicted in relation to the nearest noise sensitive locations at these distances in terms of this aspect of potential construction noise. Note that all noise sensitive properties in the vicinity of the proposed works are at a distance greater than 100m.

Considering the typical distance from works to noise sensitive locations, it is expected that the day and evening criteria for construction noise outlined here can be satisfied. Additional measures will need to be considered during periods where works are carried out during night-time periods to ensure night-time criterion is not exceeded. Specifically high impact activities will not be permitted during night-time hours. Various measures that can be considered are outlined in the mitigation section of this chapter.

Other construction activity from the Proposed Development is at sufficient distance from a significant proportion of the proposed cable works, so that when they occur at the same time, cumulative issues would not be a material issue.

In terms of noise associated with the construction activities for the grid option the associated effect is stated to be ***negative*** and ***minor*** and ***temporary***.

In the unlikely event that works are scheduled out of normal hours or at night, the range of calculated noise levels are also below a level that would lead to a significant impact. Given, however, the potential for cumulative noise impacts to occur if multiple items of plant operate at the same time, noise mitigation measures will need to be considered during these periods. As noted above, however, it is not anticipated that any works will be carried out at night time. Various measures relating to the control of noise from the works are outlined in the mitigation section of this assessment.

10.5.2 Construction Traffic

In terms of the additional construction traffic on local roads that will be generated as a result of this Proposed Development the following comment is presented. In order to increase traffic noise levels by 1dB traffic volumes would need to increase by the order of 25% along the local road network. As outlined in the relevant sections of Chapter 13 relating to traffic, additional traffic introduced onto the local road network due to the construction phase of the Proposed Development will not result in a significant noise impact.

10.5.3 Review of Construction Impacts

In terms of noise associated with these construction activities the associated effect is stated to be:

Quality	***Significance***	***Duration***
Negative	Minor	Temporary

In terms of vibration, due to the distance of activities from the site to the nearest sensitive locations and controlling vibration levels to those detailed in 10.7 the associated effect is stated to be:

Quality	***Significance***	***Duration***
Neutral	Imperceptible	Temporary

Figure 10.4 Noise Sensitive Locations Considered for Assessment

10.5.4 Operational Phase

In terms of the transformers units the EIAR prepared previously of the overall development site considered noise impacts associated with the site including the proposed transformer units. Two scenarios have been developed to consider the noise impact of the proposed operations. These are as follows:

- Scenario A – Proposed Data Storage Facility – Day to Day
- Scenario B – Proposed Data Storage Facility – Emergency

Scenario A would be considered to be the most representative of the day to day operation including the transformers. Scenario B is representative of emergency situation when a power outage or issue with supply from the national grid has occurred. It should be noted that such an event is an extremely rare occurrence.

Figure 10.4 highlights the nearest noise sensitive locations at which predictions have been carried out. Various noise contours are also presented for scenarios A and B in order to demonstrate the noise impact of the Proposed Development over a wider area.

The results of the iterations of the noise model are presented in Table 10.11. Note all plant will be selected such that no tonal noise emissions are evident at noise sensitive locations.

Table 10.11 Predicted Plant Noise Levels for Various Scenarios

Location	Predicted dB $L_{Aeq,T}$	
	Scenario A	Scenario B
R01	33	52
R02	34	52
R03	33	48
R04	31	46
R05	39	61
R06	31	49
R07	30	48

The above predicted levels are based on a situation where the receiver is downwind of all noise sources. For the purposes of the assessment against the adopted criteria this is a robust worst-case assumption.

Comment on Adopted Noise Criteria Day to Day Operations

The predicted noise levels presented in Table 10.12 have been compared to the relevant daytime, evening and night noise criteria as adopted for this assessment.

Table 10.12 Comparison of Predicted Noise Levels vs. Adopted Noise Criteria

Location	Scenario A			Scenario B		
	Predicted dB $L_{Aeq,T}$	Criterion dB $L_{Aeq,T}$	Complies?	Predicted dB $L_{Aeq,T}$	Criterion dB $L_{Aeq,T}$	Complies?
R01	33	55 (Day)	✓	52	55	✓
		50 (Evening)	✓			
		45 (Night)	✓			
R02	34	55 (Day)	✓	52		✓
		50 (Evening)	✓			
		45 (Night)	✓			
R03	33	55 (Day)	✓	48	65	✓
		50 (Evening)	✓			
		45 (Night)	✓			
R04	31	55 (Day)	✓	46	55	✓
		50 (Evening)	✓			
		45 (Night)	✓			
R05	39	55 (Day)	✓	61	65	✓
		50 (Evening)	✓			
		45 (Night)	✓			
R06	31	55 (Day)	✓	49	55	✓
		50 (Evening)	✓			
		45 (Night)	✓			
R07	30	55 (Day)	✓	48		✓
		50 (Evening)	✓			
		45 (Night)	✓			

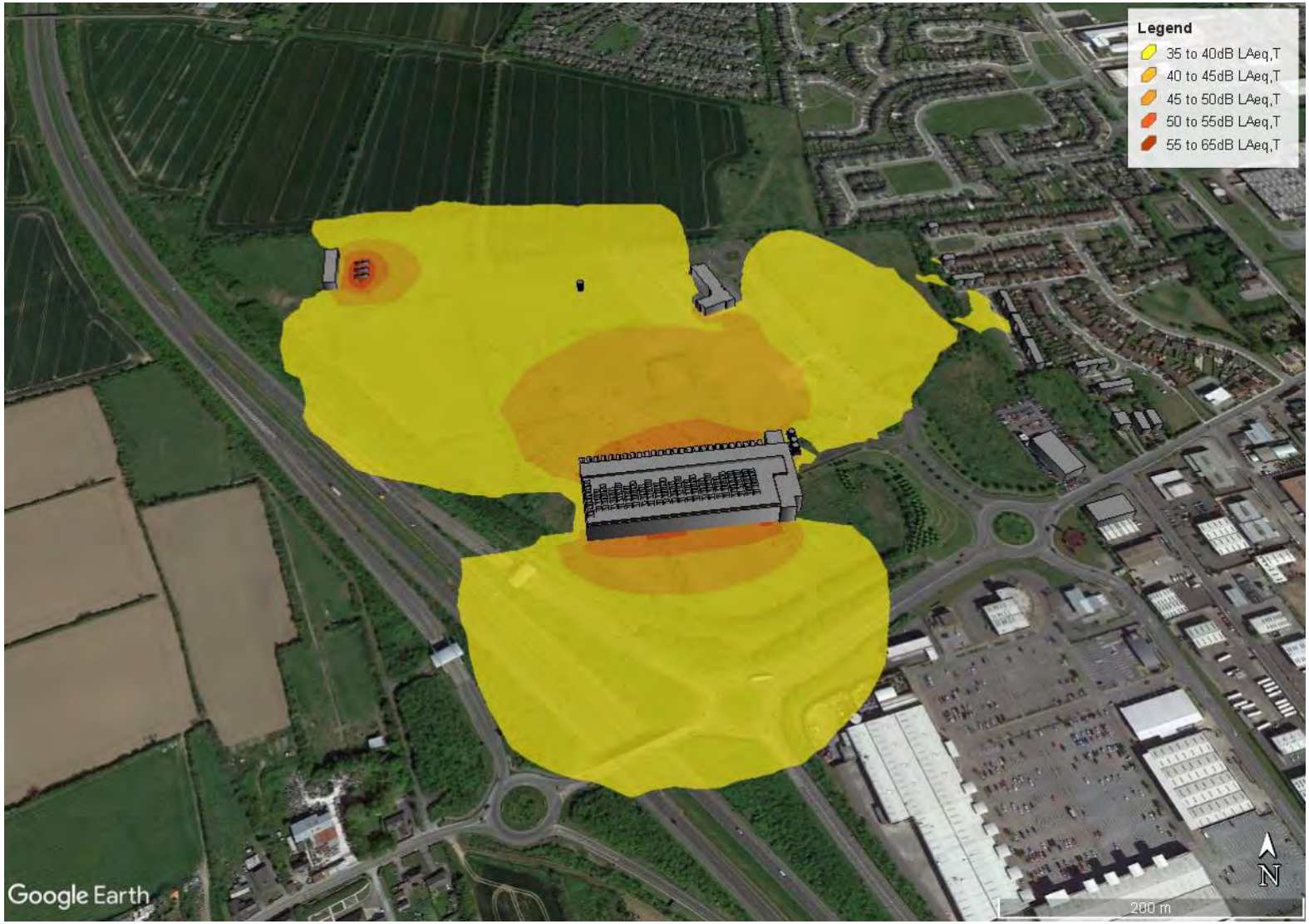

Figure 10.5 Scenario A Proposed Development and Permitted Data Storage Facility– Day to Day Noise Contour (Extent of 35dB(A))

Comment All locations are within the relevant adopted daytime and evening limits by a significant margin. All locations comply with the adopted criteria in relation to day to day operations. Figure 10.5 presents a noise contour for Scenario A.

Figure 10.6 Scenario B Proposed Development and Permitted Data Storage Facility– Emergency Noise Contour (Extent of 55dB(A))

Comment All locations are within the relevant adopted emergency operation limit in the rare event that a power loss to the site occurs. Figure 10.6 presents a noise contour for Scenario B.

Scenario A All locations are within the relevant adopted limits by a clear margin. All locations comply with the adopted criteria in relation to day to day operations. Figure 10.5 presents a noise contour for Scenario A.

Scenario B All locations are within the relevant adopted emergency operation limit in the rare event that a power loss to the site occurs. Figure 10.6 presents a noise contour for Scenario B.

Summary

Scenario A is representative of the typical day to day operations envisioned for the site. Review of the predicted noise levels and associated noise contours confirms that the site-specific levels comply with the noise criterion adopted for this assessment.

Scenario B is representative of emergency situations such as a power outage on the national grid. Review of the predicted noise levels and associated noise contours confirm that the site-specific levels comply with the noise criterion that has been adopted for these situations following review of relevant guidance.

Review of Increases in Noise Level

Table 10.15 presents the predicted changes in noise level associated with the Proposed Development at the nearest noise sensitive locations to the site.

Table 10.15 Review of Predicted Changes in Existing Noise Levels

Loc.	Scenario A – Typical Operation Daytime				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
R01	33	46	46.2	+0.2	Imperceptible
R02	34	47	47.2	+0.2	Imperceptible
R03	33	58	58	0	Not Significant
R04	31	58	58	0	Not Significant
R05	39	46	46.8	+0.8	Imperceptible
R06	31	46	46.1	+0.1	Imperceptible
R07	30	46	46.1	+0.1	Imperceptible
Loc.	Scenario A – Typical Operation Night				
	Predicted dB $L_{Aeq,T}$	Background Level dB $L_{A90,T}$	Cumulative Noise Level (dB(A))	Change in Noise Level (dB)	EPA Glossary of Impacts
R01	32	40	40.8	+0.8	Not Significant
R02	34	39	40.2	+1.2	Not Significant
R03	Commercial property – assumed unoccupied at night				
R04	31	48	48.1	+0.1	Not Significant
R05	Commercial property – assumed unoccupied at night				
R06	31	40	40.5	+0.5	Not Significant
R07	30	40	40.4	+0.4	Not Significant

Review of the predicted increases in noise level at the nearest noise sensitive locations conclude that the associated impact is '*not significant'* at all locations for Scenario A – Typical Operation night-time periods. An '*imperceptible'* or '*not significant*' impact is predicted during daytime periods. In essence the existing soundscapes that are encountered at the nearest noise sensitive locations are predicted to remain unchanged in terms of ambient noise levels with the development of the data storage facility introducing a low level of plant noise.

In terms of noise associated with day to day activities the associated effect is stated to be as follows:

Quality	*Significance*	*Duration*
Negative	*Not Significant*	*Long Term*

Additional Vehicular Traffic on Public Roads

In terms of the additional traffic on local roads that will be generated as a result of this development the following comment is presented: Considering that in order to increase traffic noise levels by 1dB traffic volumes would need to increase by the order of 25% it is considered that additional traffic introduced onto the local road network due to this Proposed Development will not result in a significant noise impact. The resultant noise impact is ***neutral, imperceptible*** and ***long-term***.

Vibration

There is no source of vibration associated with the day to day operation of the Proposed Development that will give rise to impacts at nearby sensitive locations. In terms of these the operational phase of the Proposed Development the associated effect is stated to be:

Quality	*Significance*	*Duration*
Neutral	*Imperceptible*	*Long Term*

10.6 REMEDIAL AND MITIGATION MEASURES

In order to sufficiently ameliorate the likely noise impact, a schedule of noise control measures has been formulated for both construction and operational phases associated with the Proposed Development.

10.6.1 Construction Phase

With regard to construction activities, reference has been made to BS5228 Parts 1 and 2, which offer detailed guidance on the control of noise and vibration from demolition and construction activities. Various mitigation measures will be considered and applied during the construction of the Proposed Development. As an example, the following measures will be implemented on site:

- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;
- appointing a site representative responsible for matters relating to noise and vibration;

- monitoring levels of noise and/or vibration during critical periods and at critical sensitive locations; and
- all site access roads will be kept even so as to mitigate the potential for vibration from lorries.

Furthermore, a variety of practicable noise control measures will be employed, such as:

- selection of plant with low inherent potential for generation of noise and/ or vibration;
- erection of barriers as necessary around items such as generators or high duty compressors;
- situate any noisy plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

We would recommend that vibration from construction activities to off-site residences be limited to the values set out in Table 10.7. It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage these limits may need to be reduced by up to 50%.

Note Appendix 10.4 presents an indicative construction noise and vibration management plan that will be implemented in terms of the day to day operation of the site. This will focus on opening up and maintaining lines of communication with the local community to address issues in relation to noise and/or vibration and to advise the community of periods where specific activities take place (e.g. rock breaking) that have an increased potential in giving rise to issues off site (Note: no rock breaking is anticipated as part of the Proposed Development).

10.6.2 Operational Phase

Building Services Noise / Emergency Site Operation

Once operational, there are no noise or vibration mitigation measures required. All potential noise sources e.g. the back up generator are located internal to the building structure.

With due consideration as part of the detailed design process, this approach will result in the site operating well within the constraints of the best practice guidance noise limits that have been adopted as part of this detailed assessment.

Additional Vehicular Traffic on Public Roads

The noise impact assessment outlined previously has demonstrated that mitigation measures are not required.

10.7 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

This section summarises the likely noise and vibration impact associated with the Proposed Development, taking into account the mitigation measures.

10.7.1 Construction Phase

During the construction phase of the Proposed Development there will be some impact on nearby noise sensitive properties due to noise emissions from site traffic and other activities. The application of noise limits and hours of operation (i.e. as per Table 10.5, 10.6 and Section 10.2.4), along with implementation of appropriate noise and vibration control measures (as summarised in Section 10.6.1), will ensure that noise and vibration impact is kept to a minimum. Also, it is reiterated that any construction noise impacts will be ***slight, negative*** and ***temporary*** in nature. Also, it is considered that as the Proposed Development progresses from initial ground works that construction noise impacts will reduce from slight to ***not significant.***

10.7.2 Operational Phase

Building Services Noise / Emergency Site Operation

Proprietary noise and vibration control measures will be employed in order to ensure that noise emissions from building services plant do not exceed the adopted criterion at the façade of any nearby noise sensitive locations. In addition, noise emissions should be broadband in nature and should not contain any tonal or impulsive elements. The resultant noise impact is ***negative***, ***not significant*** and ***long-term***.

Additional Vehicular Traffic on Public Roads

Any change in noise levels associated with vehicles at road junctions in the vicinity of the Proposed Development is expected to be ***imperceptible*****.** The resultant noise impact is ***neutral, imperceptible*** and ***long-term.***

10.8 RESIDUAL IMPACTS

The construction noise assessment has shown that in accordance with the 'significance' thresholds presented in the *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise* there is not a significant impact at residential locations, subject to the implementation of the mitigation measures outlined in Section 10.6.1.

The robust analysis of potential operational phase plant has shown that in accordance with the scale in the EPA Draft EIA Report Guidelines 2017 there will be a ***not significant, negative, long term*** impact at the closest residences identified on Figure 10.4. The predicted change in background noise level due to current application is the order of 1dB during night-time periods. Ambient noise levels are, and will continue to be, dictated by road traffic noise in the area while a low level of plant noise is expected to be audible during lulls in other sources (e.g. distant traffic noise).

In terms of the nearest commercial properties ***not significant, negative, long-term*** impacts are predicted as the character of the noise environment in the vicinity of this location will not be altered.

The operational noise assessment of vehicle movements associated with the site has shown that in accordance with the scale in the EPA Draft EIA Report Guidelines

2017 there will be an ***imperceptible, neutral, long-term*** impact off site noise sensitive locations considering existing traffic volumes on the local road network.

10.9 CUMULATIVE IMPACTS

During construction of the Proposed Development it is anticipated that noise and vibrations associated with construction work on the proposed cable installation routes, cable bays and substation will typically be lower than those generated by existing traffic movements on the local road network. The noise environments at the nearest noise sensitive locations to the proposed works are and will continue to be dominated by road traffic noise.

Construction being completed on the permitted data storage facility and n the adjacent site or at other sites within the wider area, whilst potentially significant at locations in close proximity to these other sites will effectively be masked by the existing traffic noise at the nearest noise sensitive locations identified in this assessment. Such works would not be expected to increase ambient noise levels in the vicinity of the noise sensitive locations that are in the proximity of the works under consideration here. All sites will be expected to work within conditioned and or best practice noise and vibration limits such that the associated noise and vibration impacts and managed. Based on this it is reiterated that any construction noise impacts will be ***slight, negative*** and ***temporary*** in nature.

Once the mitigation measures outlined above are implemented there should be no significant cumulative impact as a result of the Proposed Development.

The cumulative noise impacts of the Proposed Development and the permitted data centre have been outlined in the assessment (and modelling) presented within the assessment undertaken. The resultant noise impact is ***negative***, ***not significant*** and ***long-term***.

There are no operational vibration impacts associated with the Proposed Development or the permitted data centre, hence cumulative impacts do not arise in this instance.

10.10 REFERENCES

- EPA Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIA Reports) (2017) and draft revised Guidelines on information to be contained in Environmental Impact Statements; and Advice Notes for preparing EIS (2015).
- '*Guidelines for Environmental Noise Impact Assessment*' produced by the Institute of Environmental Management and Assessment (IEMA) (2014).
- *British Standard BS 5228 – 1: 2009+A1:2014: Code of practice for noise and vibration control on construction and open sites – Noise*.
- Transport Infrastructure Ireland (TII) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes.*
- British Standard BS 7385: 1993: *Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration*.
- British Standard BS 5228-2: 2009+A1:2014: *Code of practice for noise and vibration control on construction and open sites – Vibration*.
- British Standard BS 4142:2014+A1:2019: *Methods for rating and assessing industrial and commercial sound.*
- BS 8233:2014: *Guidance on sound insulation and noise reduction for buildings.*
- Environmental Protection Agencies *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)* (January 2016).
- ISO 1996-2:2017 *Acoustics - Description, measurement and assessment of environmental noise – Part 2: Determination of environmental noise levels.*
- British Standard *BS 6472 (1992): Guide to Evaluation of human exposure to vibration in buildings (1Hz to 80Hz).*
- ISO 9613 (1996): *Acoustics – Attenuation of sound outdoors – Part 2: General method of calculation.*
- *Calculation of Road Traffic Noise (CRTN)* issued by the Department of Transport in 1988.

APPENDIX 10.1

GLOSSARY OF ACOUSTIC TERMINOLOGY

PREPARED BY AWN CONSULTING LIMITED

ambient noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
background noise	The steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{AF90,T}$).
broadband	Sounds that contain energy distributed across a wide range of frequencies.
dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 μPa).
dB L_{pA}	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz (Hz)	The unit of sound frequency in cycles per second.
impulsive noise	A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background.
$L_{Aeq,T}$	This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T). The closer the L_{Aeq} value is to either the L_{AF10} or L_{AF90} value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources such as traffic on the background.
L_{AFN}	The A-weighted noise level exceeded for N% of the sampling interval. Measured using the "Fast" time weighting.
L_{AFmax}	is the instantaneous slow time weighted maximum sound level measured during the sample period (usually referred to in relation to construction noise levels).
$L_{Ar,T}$	The Rated Noise Level, equal to the L_{Aeq} during a specified time interval (T), plus specified adjustments for tonal character and impulsiveness of the sound.
L_{AF90}	Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to estimate a background level. Measured using the "Fast" time weighting.
L_{AT}(DW)	equivalent continuous downwind sound pressure level.

L_{ft}(DW) equivalent continuous downwind octave-band sound pressure level.

L_{day} L_{day} is the average noise level during the daytime period of 07:00hrs to 19:00hrs

L_{night} L_{night} is the average noise level during the night-time period of 23:00hrs to 07:00hrs.

low frequency noise LFN - noise which is dominated by frequency components towards the lower end of the frequency spectrum.

noise Any sound, that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it, is known as noise.

noise sensitive location NSL – Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

octave band A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards.

rating level See $L_{Ar,T}$.

sound power level The logarithmic measure of sound power in comparison to a referenced sound intensity level of one picowatt (1pW) per m^2 where:

$$Lw = 10Log\frac{P}{P_0} \text{ dB}$$

Where: p is the rms value of sound power in pascals; and
P_0 is 1 pW.

sound pressure level The sound pressure level at a point is defined as:

$$Lp = 20Log\frac{P}{P_0} \text{ dB}$$

specific noise level A component of the ambient noise which can be specifically identified by acoustical means and may be associated with a specific source. In BS 4142, there is a more precise definition as follows: ‘the equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval ($L_{Aeq,T}$)’.

tonal	Sounds which cover a range of only a few Hz which contains a clearly audible tone i.e. distinguishable, discrete or continuous noise (whine, hiss, screech, or hum etc.) are referred to as being ‘tonal’.
$^1/_3$ octave analysis	Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one–third of an octave each.

APPENDIX 10.2

BASELINE NOISE MONITORING SURVEY

PREPARED BY AWN CONSULTING LIMITED

An environmental noise survey has been conducted in order to quantify the existing noise environment. The survey was conducted in general accordance with ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*. Specific details are set out below.

10.2.1 Survey Details

10.2.1.1 Dates & Times of Survey

Noise measurements were conducted during typical day and night-time periods. The night-time survey represents the time of night that provides a measure of existing background noise levels during a period where people are attempting to go to sleep or are sleeping. The surveys were conducted during the following periods:

- Daytime – 10:25hrs to 13:30hrs on 14 November 2019;
- Daytime – 21:50hrs to 22:45hrs on 14 November 2019, and;
- Night-time – 23:30hrs on 14 November to 01:32hrs on 15 November 2019.

10.2.1.2 Personnel and Instrumentation

Donal Heavey (AWN) conducted the noise level measurements during all survey periods.

The noise measurements were performed using a Brüel & Kjær Type 2250 Sound Level Analyzer. Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator.

10.2.1.3 Measurement Locations

Figure 10.2.1 details the approximate location of the measurement positions identified below.

Location A Located in the vicinity of a private residence located to the south west of the development lands on the opposite side of the M1 junction.

Location B Located beyond the north eastern boundary of the site in the proximity of noise sensitive locations situated within The Downs residential estate. Note vehicles shown in photo were not present during the survey periods.

Location C Located beyond the eastern boundary of the site in the proximity of noise sensitive locations situated within The Cedarfield residential estate.

Figure 10.2.1 Noise Survey Locations (Source: Google Maps)

10.2.1.4 Methodology

Measurements were conducted at the boundary location noted above. Sample periods for the noise measurements were typically 15 minutes. The results were noted onto a Survey Record Sheet immediately following each sample and were also saved to the instrument memory for later analysis if required. Survey personnel noted the primary noise sources contributing to noise build-up.

10.2.1.5 Weather

The weather during the daytime survey periods was dry with wind speeds <3m/s. Temperatures were of the order of 5°C. Cloud cover was minimal (some 20%).

The weather during the night-time survey period was dry with wind speeds <3m/s. Temperatures were of the order of 3°C. Cloud cover was minimal (some 10%).

10.2.3 Survey Results

10.2 3.1 Location A

The survey results for Location A are given in Table 10.2.1 below.

Table 10.2.1 Summary of Results for Location A

Start Time		Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AF10}	L_{AF90}
Daytime	10:25	62	64	59
	11:29	62	64	59
	12:30	63	65	60
	21:50	58	60	53
Night-time	23:30	56	58	51
	00:35	52	55	46

Ambient daytime noise levels at this location were dominated by the M1 and occasional traffic movements along the Donore Road. Other noise sources noted including dogs barking, occasional aircraft movements overhead and birdsong. Distant road traffic noise typically dictated background noise levels. Ambient (i.e. $L_{Aeq,15min}$) levels were in the range of 58 to 63dB with background noise levels in the range of 53 to 60dB.

Night-time noise levels were influenced by the M1 and distant road traffic movements along with occasional local vehicle movements on the Donore Road and wind generated noise on nearby foliage. Ambient noise levels were in the range of 52 to 56dB with background noise levels were in the range 46 to 41dB.

10.2.3.2 Location B

The survey results for Location B are given in Table 10.2.2 below.

Table 10.2.2 Summary of Results for Location B

Start Time		Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AF10}	L_{AF90}
Daytime	10:48	50	51	49
	11:49	48	49	45
	12:51	49	52	46
	22:11	47	47	44
Night-time	23:52	46	47	41
	00:56	41	43	38

Ambient daytime noise levels at this location were dominated by the M1 and occasional traffic movements in the nearby residential estate. Other noise sources noted including dogs barking, occasional aircraft movements overhead and birdsong. Distant road traffic noise typically dictated background noise levels. Ambient (i.e. $L_{Aeq,15min}$) levels were in the range of 47 to 50dB with background noise levels in the range of 44 to 49dB.

Night-time noise levels were influenced by the M1 and distant road traffic movements along with occasional local vehicle movements on the Donore Road and wind generated noise on nearby foliage. Ambient noise levels were in the range of 41 to 46dB with background noise levels were in the range 38 to 41dB.

10.2.3.3 Location C

The survey results for Location C are given in Table 10.2.3.

Table 10.2.3 Summary of results for Location C

Start Time		Measured Noise Levels (dB re. $2x10^{-5}$ Pa)		
		L_{Aeq}	L_{AF10}	L_{AF90}
Daytime	11:09	49	51	47
	12:10	51	54	47
	13:11	49	51	47
	22:30	47	49	45
Night-time	00:13	43	45	40
	01:17	42	44	37

Ambient daytime noise levels at this location were dominated by the M1 and occasional traffic movements in the nearby residential estate. Other noise sources noted including dogs barking, occasional aircraft movements overhead and birdsong. Distant road traffic noise typically dictated background noise levels. Ambient (i.e. $L_{Aeq,15min}$) levels were in the range of 47 to 51dB with background noise levels in the range of 45 to 47dB.

Night-time noise levels were influenced by the M1 and distant road traffic movements along with occasional local vehicle movements on the Donore Road and wind generated noise on nearby foliage. Ambient noise levels were in the range of 42 to 43dB with background noise levels were in the range 37 to 40dB.

APPENDIX 10.3

NOISE MODELLING DETAILS & ASSUMPTIONS

PREPARED BY AWN CONSULTING LIMITED

Noise Model

A 3D computer-based prediction model has been prepared in order to quantify the noise level associated with the proposed building. This section discusses the methodology behind the noise modelling process.

DGMR iNoise

Proprietary noise calculation software has been used for the purposes of this modelling exercise. The selected software, DGMR iNoise, calculates noise levels in accordance with *ISO 9613: Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation, 1996*.

DGMR iNoise is a proprietary noise calculation package for computing noise levels in the vicinity of noise sources. iNoise calculates noise levels in different ways depending on the selected prediction standard. In general, however, the resultant noise level is calculated taking into account a range of factors affecting the propagation of sound, including:

- the magnitude of the noise source in terms of A weighted sound power levels (L_{WA});
- the distance between the source and receiver;
- the presence of obstacles such as screens or barriers in the propagation path;
- the presence of reflecting surfaces;
- the hardness of the ground between the source and receiver;
- Attenuation due to atmospheric absorption; and
- Meteorological effects such as wind gradient, temperature gradient and humidity (these have significant impact at distances greater than approximately 400m).

Brief Description of ISO9613-2: 1996

ISO9613-2:1996 calculates the noise level based on each of the factors discussed previously. However, the effect of meteorological conditions is significantly simplified by calculating the average downwind sound pressure level, $L_{AT}(DW)$, for the following conditions:

- wind direction at an angle of ±45° to the direction connecting the centre of the dominant sound source and the centre of the specified receiver region with the wind blowing from source to receiver, and;
- wind speed between approximately $1ms^{-1}$ and $5ms^{-1}$, measured at a height of 3m to 11m above the ground.

The equations and calculations also hold for average propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear calm nights.

The basic formula for calculating $L_{AT}(DW)$ from any point source at any receiver location is given by:

$$L_{fT}(DW) = LW + Dc - A \qquad \textbf{Eqn. A}$$

Where:

$L_{fT}(DW)$ is an octave band centre frequency component of $L_{AT}(DW)$ in dB relative to $2x10^{-5}Pa$;
L_W is the octave band sound power of the point source;
D_c is the directivity correction for the point source;
A is the octave band attenuation that occurs during propagation, namely attenuation due to geometric divergence, atmospheric absorption, ground effect, barriers and miscellaneous other effects.

The estimated accuracy associated with this methodology is shown in Table 10.3.1 below:

Table 10.3.1 Estimated Accuracy for Broadband Noise of L_{AT}(DW)

Height, h*	Distance, d†	
	0 < d < 100m	100m < d < 1,000m
0<h<5m	±3dB	±3dB
5m<h<30m	±1dB	±3dB

* h is the mean height of the source and receiver. † d is the mean distance between the source and receiver.
N.B. These estimates have been made from situations where there are no effects due to reflections or attenuation due to screening.

Input Data and Assumptions

The noise model has been constructed using data from various source as follows:

Site Layout The general site layout has been obtained from the drawings forwarded by MCA Architects.

Local Area The location of noise sensitive locations has been obtained from a combination of site drawings provided by MCA Architects and others obtained from Ordinance Survey Ireland (OSI).

Heights The heights of buildings on site have been obtained from site drawings forwarded by MCA Architects. Off-site buildings have been assumed to be 8m high for houses with the exception of industrial buildings where a default height of 15m has been assumed.

Contours Site ground contours/heights have been obtained from site drawings forwarded by MCA Architects where available.

The final critical aspect of the noise model development is the inclusion of the various plant noise sources. Details are presented in the following section.

Source Sound Power Data

The noise modelling competed indicates the following limits in relation to various items of plant associated with the overall site development. Plant items will be selected in order to achieve the stated noise levels and or appropriate attenuation will be incorporated into the design of the plant/building in order that the plant noise emission levels are achieved on site (including any system regenerated noise).

Table 10.3.2 L_{wA} levels Utilised in Noise Model

Source	L_{wA} - Octave Band Centre Frequency								dB (A)
	63	125	250	500	1k	2k	4k	8k	
Roof Fan Note A	56	59	67	71	69	66	62	62	75
AHU & CRAH Louvres Note B	55	61	55	51	46	44	41	32	54
Condensers	55	63	68	72	72	67	61	52	77
Generator Intake Note C	88	90	82	83	83	80	78	76	94
Generator Rear Note C	88	90	82	83	83	80	78	76	94
Generator Stack Note D	84	77	77	73	69	74	71	71	86
Generator Sides & Roof Note C	82	93	92	94	94	93	88	75	101
Transformers	64	66	69	74	72	68	63	53	78

Note A Roof exhaust with attenuator – as advised by client.
Note B Per m^2
Note C Assuming generator housing dimensions of 17m (L) x 4m (W) x 4m (H). Data based on CAT data supplied in relation to previous sites.
Note D Additional attenuation due to 20m stack and additional bends assumed.

Note E The following extract from *the "EirGrid Evidence Based Environmental Studies Study 8: Noise – Literature review and evidence-based field study on the noise effects of high voltage transmission development (May 2016)* states the following in relation to noise impacts associated with 110KvA transformer installations:

> *"The survey on the 110kV substation at Dunfirth indicated that measured noise levels (L_{Aeq}) were less than 40dB(A) at 5m from each of the boundaries of the substation. This is below the WHO night-time free-field threshold limit of 42dB for preventing effects on sleep and well below the WHO daytime threshold limits for serious and moderate annoyance in outdoor living areas (i.e. 55dB and 50dB respectively). Spectral analysis of the data recorded at this site demonstrated that there were no distinct tonal elements to the recorded noise level. To avoid any noise impacts from 110kV substations at sensitive receptors, it is recommended that a minimum distance of 5m is maintained between 110kV substations and the land boundary of any noise sensitive property."*
>
> Assuming the proposed substation installation has comparable noise emissions to the 110kV unit discussed above and considering the distance between the 110kV substation and the nearest off site locations (i.e. >250m) noise from this installation is not predicted to be an issue off site.
>
> Considering the above, it is concluded that there will be no significant noise emissions from the operation of the cable installations or substation. Consequently, there is no requirement to assess any operational noise emissions.

It is assumed that the plant parapets will be at least 0.5m higher than the highest dimension of the roof mounted plant.

Modelling Calculation Parameters[2]

Prediction calculations for plant noise have been conducted in accordance with *ISO 9613: Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation, 1996*.

Ground attenuation factors of 1.0 have been assumed. No metrological corrections were assumed for the calculations. The atmospheric attenuation outlined in Table 10.3.3 has been assumed for all calculations.

Table 10.3.3 Atmospheric Attenuation Assumed for Noise Calculations (dB per km)

Temp (ºC)	% Humidity	Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
10	70	0.12	0.41	1.04	1.92	3.66	9.70	33.06	118.4

[2] See Appendix 10.5 for further discussion of calculation parameters.

APPENDIX 10.4

INDICATIVE CONSTRUCTION NOISE & VIBRATION MANAGEMENT PLAN

PREPARED BY AWN CONSULTING LIMITED

This Noise and Vibration Management Plan (NVMP) details a *'Best Practice'* approach to dealing with potential noise and vibration emissions during the construction phase of the Proposed Development. The Plan should be adopted by all contractors and sub-contractors involved in construction activities on the site. The Site Manager should ensure that adequate instruction is provided to contractors regarding the noise and vibration control measures contained within this document.

The environmental impact assessment (EIA) Report conducted for the construction activity has highlighted that the construction noise and vibration levels can be controlled to within the adopted criteria. However, mitigation measures should be implemented, where necessary, in order to control impacts to nearby sensitive areas within acceptable levels.

Nearby sensitive properties in the vicinity of the Proposed Development are summarised in Figure 10.4.1 below:

Figure 10.4.1 Sensitive Receptors

R01 Located at the nearest private residences to the north east of the proposed site. These properties are on the Beechwood Avenue estate and consist of semidetached two storey properties.

R02 Located at the nearest private residences to the east of the proposed site. These properties are on the edge of the Cedarfield estate and again consist of semidetached two storey properties.

R03 Located in the vicinity of the Drogheda Retail Park to the south of the Proposed Development lands on the opposite side of the Donore Road.

R04 Located at the nearest private residence located to the south west of the Proposed Development lands on the opposite side of the M1 motorway. These cluster of properties are a mixture of bungalows and two storey detached units.

R05 Located at the nearest commercial property on the IDA lands to the east of the Proposed Development lands.

R06 Located at the noise sensitive locations to the north of the Proposed Development lands in The Downs and consist of semidetached two storey properties. It is understood planning permission has been granted for the Proposed Development on new residential housing on the adjacent lands marked R07.

Construction Noise Criteria

As referenced in the EIA Report prepared for the Proposed Development, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the Transport Infrastructure Ireland (TII) publication *Guidelines for the Treatment of Noise and Vibration in National Road Schemes*[3] which indicates the following criteria and hours of operation.

Table 10.4.1 Construction Noise Limit Values

Days and Times	Noise Levels (dB re. 2x10-5 Pa)	
	$L_{Aeq(1hr)}$	L_{Amax}
Monday to Friday 07:00hrs to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60*	65*
Saturdays 08:00hrs to 13:00hrs	65	75

Note * Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

Construction Vibration Criteria

It is recommended in this EIA Report that vibration from construction activities to off-site residences be limited to the values set out in Table 10.4.2. It should be noted that these limits are not absolute, but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage these limits may need to be reduced by up to 50%.

Table 10.4.2 Construction Vibration Limit Values

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

Hours of Work

The proposed general construction hours are 07:00 to 18:00hrs, Monday to Friday and 08:00 to 14:00 on Saturdays. However, weekday evening works may also be required from time to time.

Weekday evening activities should be significantly reduced and generally only involve internal activities and concrete pouring which will be required during certain phases of the Proposed Development. As a result, noise emissions from evening activities are expected to be significantly lower than for other general daytime activities.

[3] *Guidelines for the Treatment of Noise and Vibration in National Road Schemes, Revision 1, 25 October 2004*, Transport Infrastructure Ireland

Best Practice Guidelines for the Control of Noise & Vibration

BS5228 includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant;
- control of noise sources;
- screening;
- hours of work;
- liaison with the public, and;
- monitoring.

Detailed comment is offered on these items in the following paragraphs. Noise and vibration control measures that will be considered include the selection of suitable plant, enclosures and screens around noise sources, limiting the hours of work and monitoring.

Selection of Quiet Plant

This practice is recommended in relation to sites with static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures where possible. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

General Comments on Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration should be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

BS5228 states that *"as far as reasonably practicable sources of significant noise should be enclosed"*. In applying this guidance, constraints such as mobility, ventilation, access and safety must be taken into account. Items suitable for enclosure include pumps and generators. Demountable enclosures will also be used to screen operatives using hand tools and will be moved around site as necessary.

In practice, a balance may need to be struck between the use of all available techniques and the resulting costs of doing so. As with Ireland's Environmental Protection Act legislation, we propose that the concept of *"best available techniques not entailing excessive cost "*(BATNEEC) be adopted. Furthermore, proposed noise control techniques should be evaluated in light of their potential effect on occupational safety etc.

BS5228 makes a number of recommendations in relation to "use and siting of equipment". These are all directly relevant and hence are reproduced in full. These recommendations will be adopted on site.

> *"Plant should always be used in accordance with manufacturers' instructions. Care should be taken to site equipment away from noise-sensitive areas. Where possible, loading and unloading should also be carried out away from such areas. Special care will be necessary when work has to be carried out at night.*

Circumstances can arise when night-time working is unavoidable. Bearing in mind the special constraints under which such work has to be carried out, steps should be taken to minimise disturbance to occupants of nearby premises.

Machines such as cranes that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum. Machines should not be left running unnecessarily, as this can be noisy and waste energy.

Plant known to emit noise strongly in one direction should, when possible, be orientated so that the noise is directed away from noise-sensitive areas. Attendant operators of the plant can also benefit from this acoustical phenomenon by sheltering, when possible, in the area with reduced noise levels.

Acoustic covers to engines should be kept closed when the engines are in use and idling. The use of compressors that have effective acoustic enclosures and are designed to operate when their access panels are closed is recommended.
Materials should be lowered whenever practicable and should not be dropped. The surfaces on to which the materials are being moved could be covered by resilient material."

All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Screening

Typically, screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen and its position relative to both the source and receiver.

The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen should be bent around the source. The height of any screen should be such that there is no direct line of sight between the source and the receiver.

BS5228 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier should be such that there are no gaps or openings at joints in the screen material. In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier rather than the transmission through the barrier itself. In practice screens constructed of materials with a mass per unit of surface area greater than 7 kg/m^2 will give adequate sound insulation performance.

In addition, careful planning of the site layout should also be considered. The placement of site buildings such as offices and stores and in some instances, materials such as topsoil or aggregate can provide a degree of noise screening if placed between the source and the receiver.

Vibration

The vibration from construction activities will be limited to the values set out in Table 2. It should be noted that these limits are not absolute but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are normally unlikely to cause cosmetic damage, but

construction work creating such magnitudes should proceed with caution. Where there is existing damage, these limits may need to be reduced by up to 50%.

Liaison with the Public

The Contractor will provide proactive community relations and will notify the public and sensitive premises before the commencement of any works forecast to generate appreciable levels of noise or vibration, explaining the nature and duration of the works. The Contractor will distribute information circulars informing people of the progress of works and any likely periods of significant noise and vibration.

A designated noise liaison should be appointed to site during construction works. Any complaints should be logged and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. rock breaking, piling, etc., the site contact should inform the nearest noise sensitive locations of the time and expected duration of the works.

Noise Monitoring

During the construction phase consideration should be given to noise monitoring at the nearest sensitive locations.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise* and be located a distance of greater than 3.5m away from any reflective surfaces, e.g. walls, in order to ensure a free-field measurement without any influence from reflected noise sources.

Vibration Monitoring

During the construction phase consideration should be given to vibration monitoring at the nearest sensitive locations.

Vibration monitoring should be conducted in accordance with BS7385-1 (1990) *Evaluation and measurement for vibration in buildings — Part 1: Guide for measurement of vibrations and evaluation of their effects on buildings* or BS6841 (1987) *Guide to measurement and evaluation of human exposure to whole-body mechanical vibration and repeated shock*.

The mounting of the transducer to the vibrating structure should comply with BS ISO 5348:1998 *Mechanical vibration and shock – Mechanical mounting of accelerometers*. In summary, the following ideal mounting conditions apply:

- the transducer and its mountings are as rigid as possible;
- the mounting surfaces should be as clean and flat as possible;
- simple symmetric mountings are best, and;
- the mass of the mounting should be small in comparison to that of the structure under test.

In general, the transducer will be fixed to the floor of a building or concrete base on the ground using expansion bolts. In instances where the vibration monitor will be placed outside of a building a flat and level concrete base with dimensions of approximately 1m x 1m x 0.1m will be required.

APPENDIX 10.5

NOISE MODEL PARAMETERS

PREPARED BY AWN CONSULTING LIMITED

Prediction calculations for noise emissions have been conducted in accordance with *ISO 9613: Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation, 1996*. The following are the main aspects that have been considered in terms of the noise predictions presented in this instance.

Directivity Factor: The directivity factor (D) allows for an adjustment to be made where the sound radiated in the direction of interest is higher than that for which the sound power level is specified. In this case the sound power level is measures in a down wind direction, corresponding to the worst-case propagation conditions and needs no further adjustment.

Ground Effect: Ground effect is the result of sound reflected by the ground interfering with the sound propagating directly from source to receiver. The prediction of ground effects is inherently complex and depend on source height receiver height propagation height between the source and receiver and the ground conditions. The ground conditions are described according to a variable defined as G, which varies between 0.0 for hard ground (including paving, ice concrete) and 1.0 for soft ground (includes ground covered by grass trees or other vegetation) Our predictions have been carried out using various source height specific to each plant item, a receiver heights of 1.6m for single storey properties and 4m for double. An assumed ground factor of G = 1.0 has been applied off site. Noise contours presented in the assessment have been predicted to a height of 4m in all instances. For construction noise predictions have been made at a level of 1.6m as these activities will not occur at night.

Geometrical Divergence This term relates to the spherical spreading in the free-field from a point sound source resulting in attenuation depending on distance according to the following equation:

$$A_{geo} = 20 \times \log (\text{distance from source in meters}) + 11$$

Atmospheric Absorption Sound propagation through the atmosphere is attenuated by the conversion of the sound energy into heat. This attenuation is dependent on the temperature and relative humidity of the air through which the sound is travelling and is frequency dependent with increasing attenuation towards higher frequencies. In these predictions a temperature of 10^{o}C and a relative humidity of 70% have been used, which give relativity low levels of atmosphere attenuation and corresponding worst case noise predictions.

Table 10.5.1 Atmospheric Attenuation Assumed for Noise Calculations (dB per km)

Temp (^{o}C)	% Humidity	Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
10	70	0.12	0.41	1.04	1.92	3.66	9.70	33.06	118.4

Barrier Attenuation The effect of any barrier between the noise source and the receiver position is that noise will be reduced according to the relative heights of the source, receiver and barrier and the frequency spectrum of the noise.

11.0 ARCHAEOLOGICAL, ARCHITECTURAL AND CULTURAL HERITAGE

11.1 INTRODUCTION

The Proposed Development, as described in Chapter 2 is located Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath.

11.2 METHODOLOGY

11.2.1 Introduction

To set the Proposed Development within its wider archaeological and cultural heritage landscape, and to assess the archaeological potential of the site, a paper survey of archaeological, historical and cartographic sources was undertaken.

11.2.2 Recorded Archaeological Sites

The Record of Monuments and Places was consulted for the relevant parts of Co. Meath. This is a list of archaeological sites known to the National Monuments Service. The relevant files for these sites contain details of documentary sources and aerial photographs, early maps, OS memoirs, OPW Archaeological Survey notes and other relevant publications. There are twenty-two recorded archaeological monuments within c. 1km of the Proposed Development (see Appendix 11.1 and Figure 11.1). The majority of these sites relate to previously unrecorded features identified during pre-development assessment works associated with the construction of the M1 Northern Motorway.

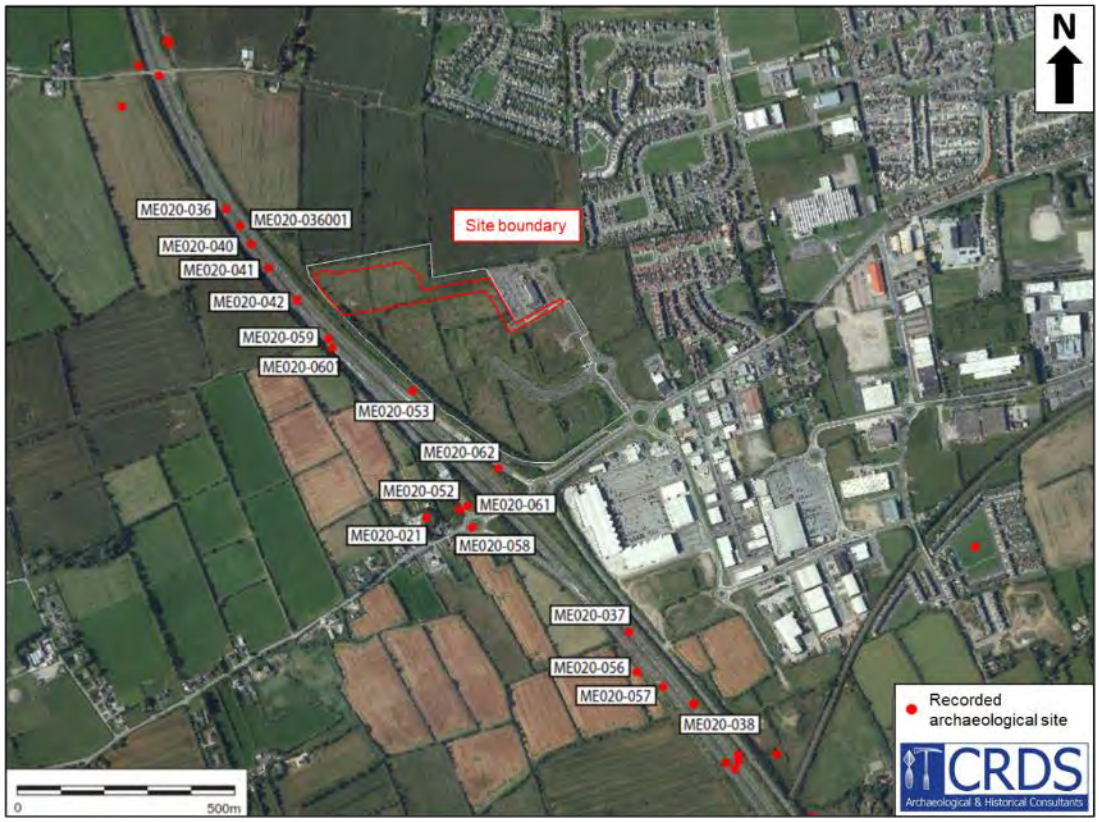

Figure 11.1 Recorded archaeological monuments within c. 500m of the Proposed Development (source: www.archaeology.ie)

11.2.3 Recorded Archaeological Finds

The topographical files in the National Museum of Ireland were consulted to determine if any archaeological artefacts had been recorded from the area. This is the National archive of all known finds recorded by the National Museum. It relates primarily to artefacts but also includes references to monuments and has a unique archive of records of previous excavations. Other published catalogues of prehistoric material were also studied: Raftery (1983 - Iron Age antiquities), Eogan (1965; 1993; 1994 - bronze swords, Bronze Age hoards and goldwork), Harbison (1968; 1969a; 1969b - bronze axes, halberds and daggers) and the Irish Stone Axe Project Database (Archaeology Dept., U.C.D.). See Appendix 11.2 for list of recorded finds.

11.2.4 Cartographic Sources

Analysis of cartographic sources is important in tracing the development of the site. Primary cartographic sources consulted consisted of the Ordnance Survey 6" maps, first and later editions, 25” and large-scale plans of the site (T.C.D. Map Library) (see Figure 11.2).

Figure 11.2 Extract from Ordnance Survey 1st edition map of the area of the Proposed Development (from www.archaeology.ie).

11.2.5 Aerial Photography

The Aerial photographic coverage of the Geological Survey of Ireland is an important source of information regarding the precise location of sites and their extent. It also provides initial information on the terrain and its likely potential for archaeology. Aerial photographs of the area of the Proposed Development were not available for examination in the Geological Survey of Ireland.

11.2.6 Recorded Archaeological Excavations

The excavation bulletins were consulted to identify any previous excavations that may have been carried out within the Proposed Development area. This database contains summary accounts of all the excavations carried out in Ireland, North and South, from 1985 to 2018. A list of previous excavations in the area at the time of the assessment is given in Appendix 11.3; see also Figure 11.3.

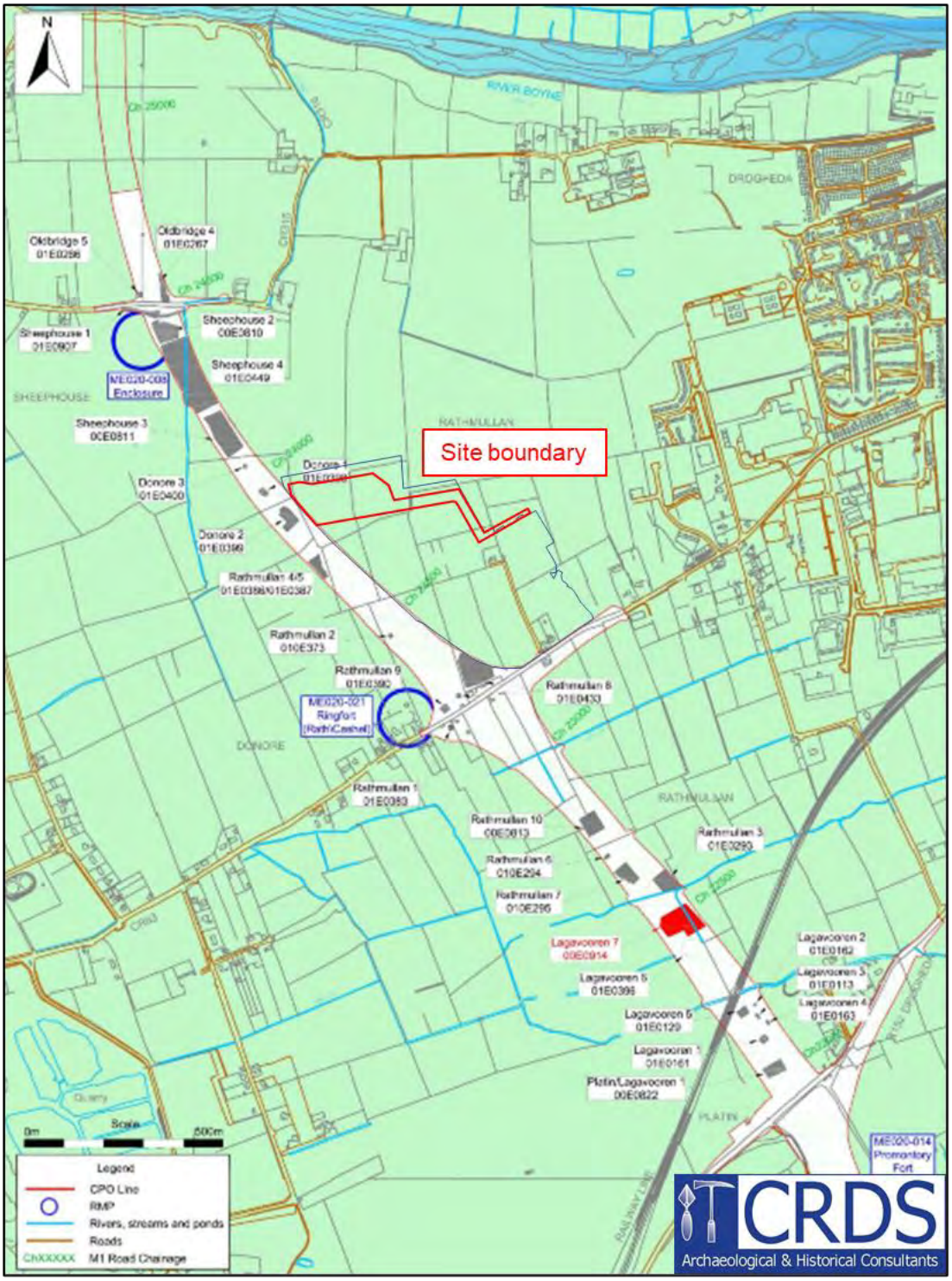

Figure 11.3 Recorded excavations in the vicinity of the Proposed Development (from IAC Ltd).

11.2.7 Recorded Architectural Heritage Sites

The National Inventory of Architectural Heritage (NIAH) is a systematic programme of identification, classification and evaluation of the architectural heritage of the State. The Minister for Arts, Heritage and the Gaeltacht is currently using the Inventory as the basis for making recommendations for the NIAH. There are no structures included in the NIAH within the vicinity of the Proposed Development. However, the remains of vernacular structures were excavated and recorded by CRDS Ltd (see Appendix 11.3 (2002:1511)) during the construction of the infrastructure for the Drogheda IDA Business and Technology Park in 2002.

11.2.8 Historical Research

Historical research commenced with an assessment of Hayes' Manuscript Sources for the History of Irish Civilisation (1965) and Sources for the History of Irish Civilisation (1970).

11.2.9 Previous & On-going Archaeological Works at the Site

A comprehensive archaeological assessment comprising archaeo-geophysical survey (licence no. 02R0026), pre-development testing and archaeological monitoring (licence no. 02E0183), was undertaken at the site in 2002 by CRDS Ltd (see section 11.3.3 below).

A comprehensive programme of archaeological excavation commenced on site in March 2020 (licence no. 20E0082). The work is being undertaken by IAC Ltd and is being overseen by CRDS Ltd (see section 11.3.4 below)

11.3 RECEIVING ENVIRONMENT

11.3.1 Introduction

The Proposed Development is situated in the east of Co. Meath between the River Nanny and the River Boyne, an area with a rich historical and archaeological heritage. The Proposed Development lies within the area referred to in early historic sources as *Mag Breg*. The term *mag* means a plain and generally implies an area with a great antiquity of settlement, a fact clearly borne out by the archaeological evidence. There is evidence for human occupation in this area dating from the Mesolithic to modern times. West of the Proposed Development is the complex of prehistoric monuments at *Brú na Boinne*, a designated World Heritage Site. One of the most important features in the area is the River Boyne itself. The historical sources clearly indicate that the mouth of the Boyne (*Inber Colpdi*) was an important point of ingress into Ireland, with the river itself providing a useful conduit for trade and communication within the country itself.

The site adjoins the M1 northern Motorway where a large amount of previous archaeological work has been undertaken, a number of archaeological sites dating from the Neolithic right down to the early medieval period, and indeed later have been identified and excavated (see below and Figure 11.1; see also Appendix 11.1). There follows a summary discussion of the archaeological and historical background of the area of the Proposed Development.

11.3.2 Prehistory

The earliest recorded finds from the area date to the Neolithic Period (*c.* 4000 – 2000 BC). These comprise Western Neolithic pottery found during the excavation of a habitation site (Excavation licence no. 00E0914, see RMP ME020-038----) in the townland of Rathmullan. In addition, Rathmullan is situated in the region of the River Boyne, one of the richest areas of prehistoric settlement in Ireland (Cooney 2000; Cooney and Grogan 1995).

Although some Mesolithic (c. 6000BC-4000BC) flints have been found at Clogher Head, Tullyallen and near Newgrange, the earliest substantial evidence for human habitation in this area dates to the Neolithic period (*c.* 4000BC-2500BC). The most immediate evidence comes from the excavations at the sites of the passage tombs of Newgrange and Knowth, which from part of the complex of monuments at *Brú na Boinne*. Both of these excavations revealed complex phases of occupation and ritual activity beginning in the Neolithic and continuing into the Bronze Age. In fact, the excavations at Knowth revealed activity dating as late as the Anglo-Norman period (Herity and Eogan, 1977). Further to the west and south in Co. Meath are the passage tombs at Loughcrew and Fourknocks, and also the complex of monuments at Tara. The presence of two passage tomb cemeteries (Loughcrew and *Brú na Boinne*) as well as isolated passage tombs (e. g. Fourknocks and the mound of the hostages at Tara), and other megalithic monuments is strongly suggestive of a vibrant Neolithic economy in this area.

The introduction of metalworking technology to Ireland corresponds with many changes in the archaeological record, both in terms of the material culture present at sites as well as the nature of the sites themselves. At Newgrange and Knowth, there is evidence for both domestic and ritual activity relating to the early Bronze Age. Though this activity has markedly different characteristics to that of the preceding Neolithic period, with new structural forms and new artefacts (such as Beaker pottery), it also indicates a degree of continuity with the preceding period.

Excavations in the area surrounding the site show continued activity into the Bronze Age (*c.* 2000 – 500 BC) attested to by the discovery of fusiform beads found with a bowl food vessel a short distance upstream from the mouth of the River Boyne (see Appendix 2; Coffey 1895; Eogan 1994). A significant Early Bronze Age habitation site (Excavation licence no. 00E0914, see RMP ME020-038----) was excavated in the townland of Rathmullan in advance of the construction of the M1 Northern Motorway. A number of burnt mounds or fulachta fiadh, possible Bronze Age cooking sites, have also been recorded in the area for example at Donore (RMP ME020-041----) and Rathmullan (RMP ME020-038003- and RMP ME020-053----).

Evidence for Late Bronze Age (c. 1000BC-500BC) and Early Iron Age is more ephemeral within the study area comprising some coarse ware pottery sherds recovered in the townland of Sheephouse during pre-development archaeological works (Excavation licence no. 00E0811, see RMP ME020-036----).

11.3.3 Early Medieval

The Proposed Development site is located within the territory controlled by the Ciannachta, the most prominent of the subject peoples of Brega during the early medieval period. Though typically associated with the baronies of Ferrad, Co. Louth and Duleek, Co. Meath – essentially the lower reaches of the Boyne – there is every indication that their influence extended much further south, well into Co. Dublin (Bolger 1997). Brega was controlled for most of the early medieval period by the *Síl*

nÁeda Sláine, who claimed to be part of the *Uí Néill*. Though their influence on a nation level waned from the 8th century on, various branches of the dynasty controlled Brega down to the late 10th century. Immediately to the west of the Proposed Development area is the site of Knowth (*Cnogba*), an important political centre during this period. The mound of the passage tomb was altered to form a highly defensive enclosure, and several souterrains were also built into the mound. Historically the site is linked to the *Síl nÁeda Sláine*, and various members of the branch which claimed kingship over the Ciannachta are also listed as kings of Knowth.

The mouth of the Boyne, *Inber Colpdi*, is frequently referred to as an important landing point and point of ingress into the country. Finds from the River Boyne at Drogheda have included two penannular brooches, a double spiral-headed pin of 7th- 8th century AD date and five bronze stick pins of 10th –12th century date. A large coin hoard from the 10th century containing silver pennies from York and Kufic dirhams from the east was found in a railway cutting close to the town. Although these features and finds do not confirm pre-Norse or pre-Norman settlement of the town they do indicate flourishing Early Medieval activity in the Drogheda area.

Adomnán refers frequently to monks from Iona arriving in Ireland at *Inber Colpdi* or setting sail for Iona from there. Certainly, there is good archaeological as well as historical information which illustrates links between Brega and Britain (particularly Northumbria) and also continental Europe at this time (Bolger 1997).

The most common indicator of settlement in this period is the ringfort. Ringforts are circular enclosures surrounded by one, two or even three banks of earth or stone, with or without ditches. They constituted the normal defended farmhouse or dwelling site of the Iron Age (*c.* 250 BC – 1170 AD) in Ireland. There are two possible ringfort sites close to this development area, at Rathmullan *c.* 500m west of the Proposed Development site (RMP ME020-021----). It is from this monument that the townland of Rathmullan received its name.

The ecclesiastical settlement of Duleek located *c.* 4km southwest of the site, was established in the 5th century AD and is the earliest ecclesiastical foundation in the area. The name reputedly arises from *dam liacc*, literally church of stone. Stone buildings would not have been a common phenomenon in early medieval Ireland, especially in areas such as this where timber would have been more readily available. The site is associated with St. Cianán in AD 488 and was sacked several times by Norse raiding parties between 830 and 1149 (Bradley 1980-81, 40).

The monastic enclosure and associated cemetery at Colp near the mouth of the Boyne is thought to have been in existence from the 5th or 6th centuries. There are also reference to Platin (Old Irish Blaitine) in the annals for the 7th and 8th centuries AD, indicating the possible presence of a further church site there. This church is said to have been one of the original churches founded by St. Patrick (Cuffe 1964, 143).

11.3.4 Later Medieval

To the northeast of Rathmullan, Drogheda was one of the most important medieval towns in Ireland, third only after Dublin and Waterford. It was founded by the Norse under Turgesius in AD 911, fortified with an Anglo-Norman motte to command the bridge after which the town is named. The early Anglo-Norman settlement was developed as two separate towns based on the early disposal of land grants in Meath and Oriel (Louth). The importance for Drogheda was derived from its twin roles as the port for the Meath lands and as the base for expansion in Louth and northwards to Ulster (D'Alton 1844, 141-6; Bradley 1978, 103). The building of town walls began in

AD 1234, of which significant portions survive, for example at Lagavooren. The two sections of the town were finally united in AD 1412 (Thomas 1992, 72-78). The town was the scene of the infamous massacre of 2000 citizens by Oliver Cromwell on 10th September, AD 1649.

In AD 1690 the last actions of the battle of the Boyne were fought out around Rathmullan, when French troops fighting for James II engaged a force of English Dragoons from William of Oranges army at Duleek Pass. King William spent the night after the battle in Duleek town (Lewis 1837, 565; Leask 1916, 203; Sampson 1960, 57).

A rimsherd of a later medieval vessel and a large fragment of a possible late medieval floor tile were recovered from modern field drains the townland of Rathmullan during archaeological monitoring of topsoil stripping in advance of the construction of the M1 toll plaza (Excavation Licence no. 02E0870, see RMP ME020-052----).

11.3.5 Site Assessment

The land is generally flat, having a fall with a level difference of c. 5m from the western boundary to the eastern boundary. Fields are in general overgrown with dense foliage and are bounded by mature hedgerows.

Internal access roads have been constructed within the Drogheda IDA Business and Technology Park to serve indicative Masterplan development. One office building has been constructed to the east of the site, within the Drogheda IDA Business and Technology

11.3.6 Results of Archaeological Geophysics and Testing (by CRDS Ltd 2002)

As noted above, a comprehensive archaeological assessment comprising archaeo-geophysical survey (licence no. 02R0026), pre-development testing and archaeological monitoring (licence no. 02E0183), was undertaken at the site in 2002 by CRDS Ltd. A summary of the results are shown in Figures 11.4 and 11.5.

In all c. 25 hectares was tested and a total of sixty-eight possible archaeological features were identified throughout the Proposed Development area. Eight archaeological zones, comprising twenty-two features or complexes of features were uncovered. There is a high density of archaeology appearing in fields one, four, five, six, seven, eight and eleven. A further six isolated features were uncovered in fields nine, ten and twelve for which additional assessment is required for four, and a total of twenty-seven features were uncovered during monitoring of the road strip and site compound for phase 1 of the Proposed Development. One of these which was in isolation from the rest, a small charcoal filled pit, was sectioned and recorded in the course of this work. The features uncovered in the area of the compound (four) were recorded and sampled and the compound was then stoned.

In fields five and six particularly the extent of the complexes indicated by the features uncovered in the test trenching can be estimated from the signals recorded in the geophysical survey. These suggest quite extensive archaeological deposits. The complex of features in field four is also significant. A preliminary assessment of the nature of all these features indicate that they are prehistoric in date, struck flint has been recovered from some, as well as bone, both burnt and unburnt in two cases. The majority of the features consist of spreads of burnt material, and these generally correlate well with the geophysical signal, which initially, being so clear, was interpreted as possible modern debris. On the basis of this correlation, there are a

number of additional areas requiring further clarification, and the extension of one other identified area. In the course of the pre-development testing post-medieval to modern pottery was recovered, though in small quantities, however only three sherds of medieval pottery were identified.

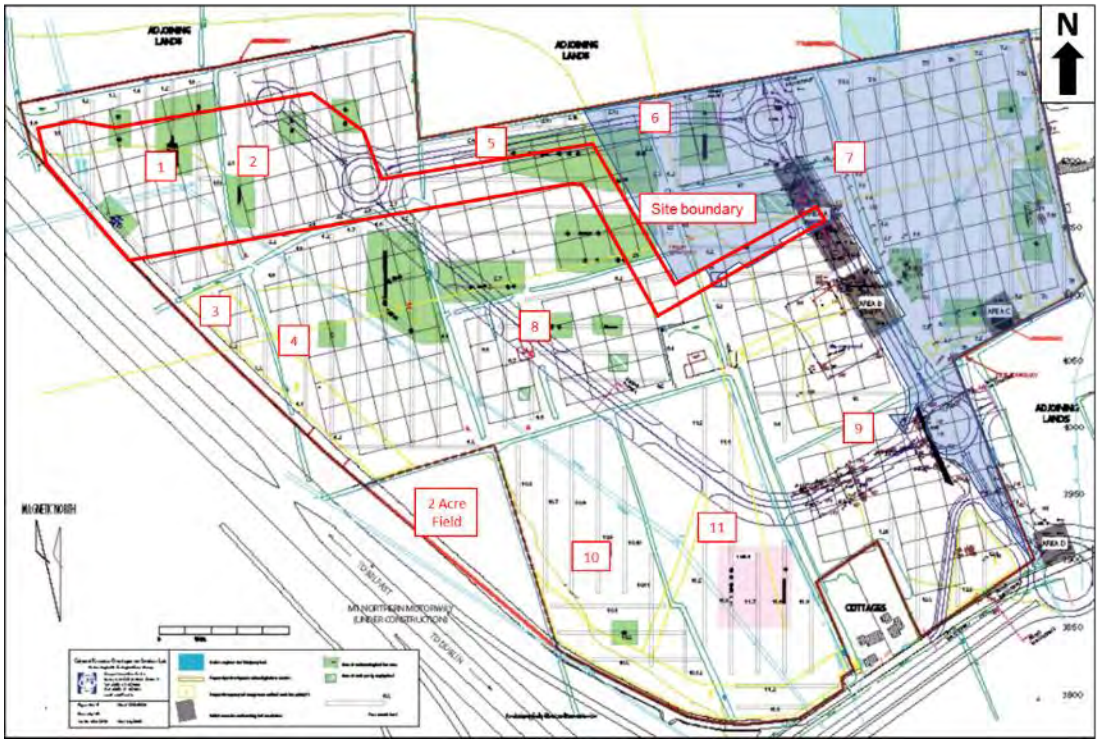

Figure 11.4 Results of geophysical survey and archaeological testing

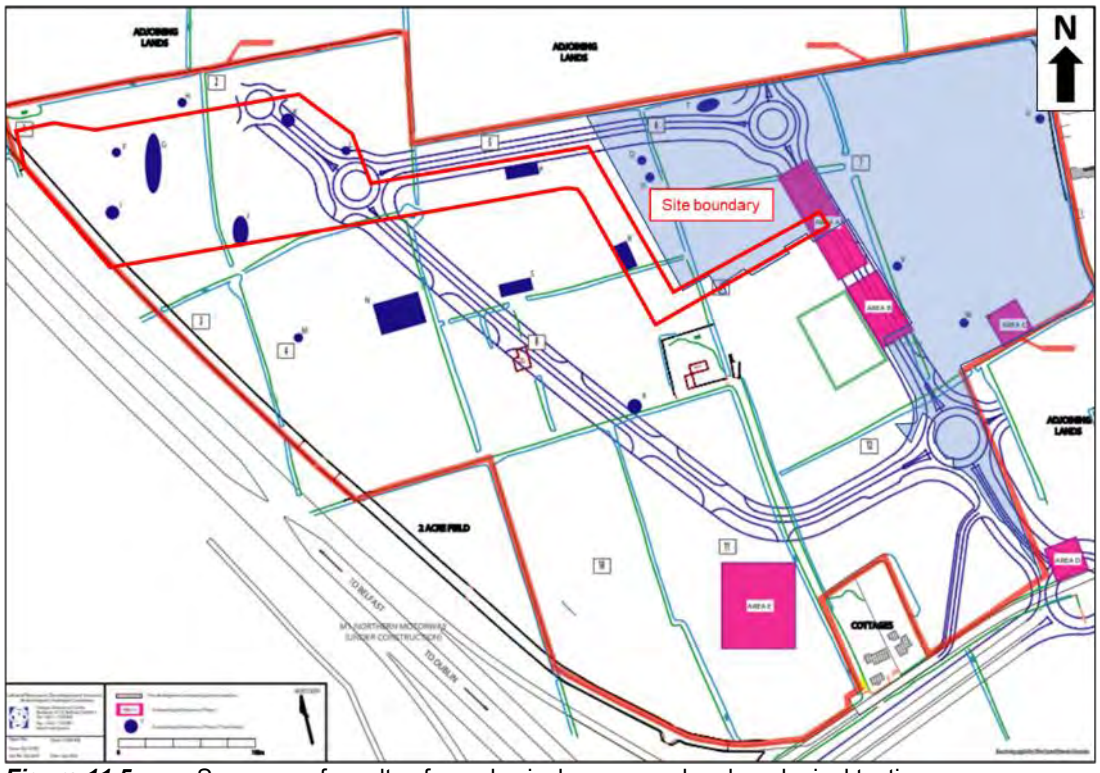

Figure 11.5 Summary of results of geophysical survey and archaeological testing

The Proposed Development impacts on nine of these areas (Area A – Field 7; Areas F, G & I – Field 1; Areas J, K & L – Field 2; Areas P & R – Field 5). For reference,

descriptions of all identified features are included here. Area A was excavated in advance of a previous development by IAC Ltd in 2005 (License no. 05E252). Areas B, C, D and E were also excavated in advance of previous development works (see Appendix 11.3).

Field One (AREAS J, K, L)
A total of five possible archaeological features were identified in this field. These were mainly concentrated in the northern area of field one. A number of possible postholes were uncovered and charcoal scatterings appeared over the area. These features have been covered with plastic for later evaluation. The cultivation furrows and drainage ditches revealed a roughly east-west cultivation and drainage pattern.

Field Two (AREAS F, G, H, I)
A total of thirty-eight features were recorded in field two, of which five may be of archaeological significance. These were located in trenches one, three and five, all occurring in the central areas of the trenches. These were covered with plastic for later evaluation. Most of the field drains reveal that there appears to be an east-west drainage pattern.

Field Three (No AREAS)
No Archaeology was noted within this field, although it is close to a Bronze Age site (site 4) on the M1 excavated by IAC.

Field Four (AREAS N, M)
Field four revealed a total of eleven potential archaeological features, one of these features was located in trench two and the remaining ten features were located in trenches five and six. There is a high density of archaeological features evident in the north/east area of field four. These features may indicate the possible presence of a prehistoric habitation or cooking site. The orientation of the cultivation furrows indicates an east-west cultivation pattern.

Field Five (AREAS O, P, Q, R, S)
Field five revealed a total of thirty potential archaeological features. There is a high density of archaeological features spread out over the eastern and southern area of field five. These features may indicate the possible presence of a prehistoric habitation or cooking site. There is a high concentration of postholes/stakeholes present in this field. The orientation of the two linear features in trench one and seven may indicate a north-south earlier field boundary pattern.

Field Eight (AREA X)
Field eight contained a total of nine features of which three may be of archaeological significance. These are all located in the centre north area of the field in trench three. The orientation of the furrows indicates a north-south field pattern. The archaeology appears to contain some domestic debris with charcoal present on the surface. The full extent of the archaeology cannot be determined.

Field Nine (AREAS A, B)
Areas have been developed.

Field Ten (No AREAS – discrete features)
Field ten produced very little evidence of archaeological activity, there was only one isolated possible archaeological feature (burnt circular area), this was located in trench two, which was situated in the southern area of field ten. The presence of furrows and drainage ditched show clear evidence of previous cultivation occurring in this field. The

orientation of the furrows and drainage ditches all generally followed a roughly east-west direction.

Field Eleven (AREA E)
A large area of interest (marked Area E) was noted in Field 11. This consists of possible two discrete areas of burnt stones and charcoal stained soil. In Trench 11.8 an area 30m north south by 12m east west was exposed and the spread continued to east and west. In Trench 11.6 a number of features including two possible gullies or ditches, and five pits were uncovered in an area 30m north south. No features were uncovered in the intervening trench 11.6 and the trenches are set at 20m centres, however, as they occur roughly opposite each other, the total area requires further investigation.

Two Acre Field (No AREAS – discrete features)
Five trenches were excavated. Twelve features were recorded in this field, ten of which were deemed non-archaeological. They comprised of cultivation furrows, natural bands of clay and field drains. The orientation of the furrows denotes a north-east/south west cultivation pattern, while the drainage system seems to have run in an east/west direction.

The date of the well and associated masonry within trench 1 is not certain as neither a well nor a house structure are marked on the 6-inch O.S. maps, either the first or second editions or the revision of 1883. No pottery or other datable material was recovered.

11.3.7 Results of On-going Archaeological Excavations (by IAC Ltd 2020)

As noted above, a comprehensive programme of archaeological excavation commenced on site in March 2020 (licence no. 20E0082). The work is being undertaken by IAC Ltd and is being overseen by CRDS Ltd. The work is being undertaken in response to conditions relating to an extant permission (MCC ref: LB/191735) for a data storage facility and ancillary development.

In consultation with the National Monuments Service Section of the Dept of Culture, Heritage and the Gaeltacht, the features identified through geophysical survey and testing as described above were assigned to Areas requiring topsoil stripping, assessment and excavation. These are shown in Figure 11.6 as Areas 1 – 6, of which Areas 1, 2 and 4 are impacted by the Proposed Development.

Based on the findings of the topsoil stripping and assessment of the above areas, two additional Areas (Areas 7 and 8) were also identified as requiring topsoil stripping, assessment and excavation (see Figure 11.7).

The topsoil strip and assessment confirmed the findings of the archaeological testing, and also identified a series of shallow features across the site. Summaries of the features encountered in Areas 1, 2 and 4 are given in Appendix 11.4.

Archaeological excavation of features identified in Areas 1, 2 & 4 commenced in May 2020 and are due for completion in November 2020. In accordance with archaeological licensing conditions, a full report will be presented to the National Monuments Service on completion of site works, post-excavation analysis and reporting.

Topsoil stripping and assessment of Areas 7 and 8 is also ongoing. A detailed method statement outlining the methodology and resources for the excavation of features identified during the assessment of these Areas will be determined in consultation with

the Project Archaeologist (CRDS Ltd) and the overseeing engineers (CSEA Ltd) and agreed with the National Monuments Section under the existing license.

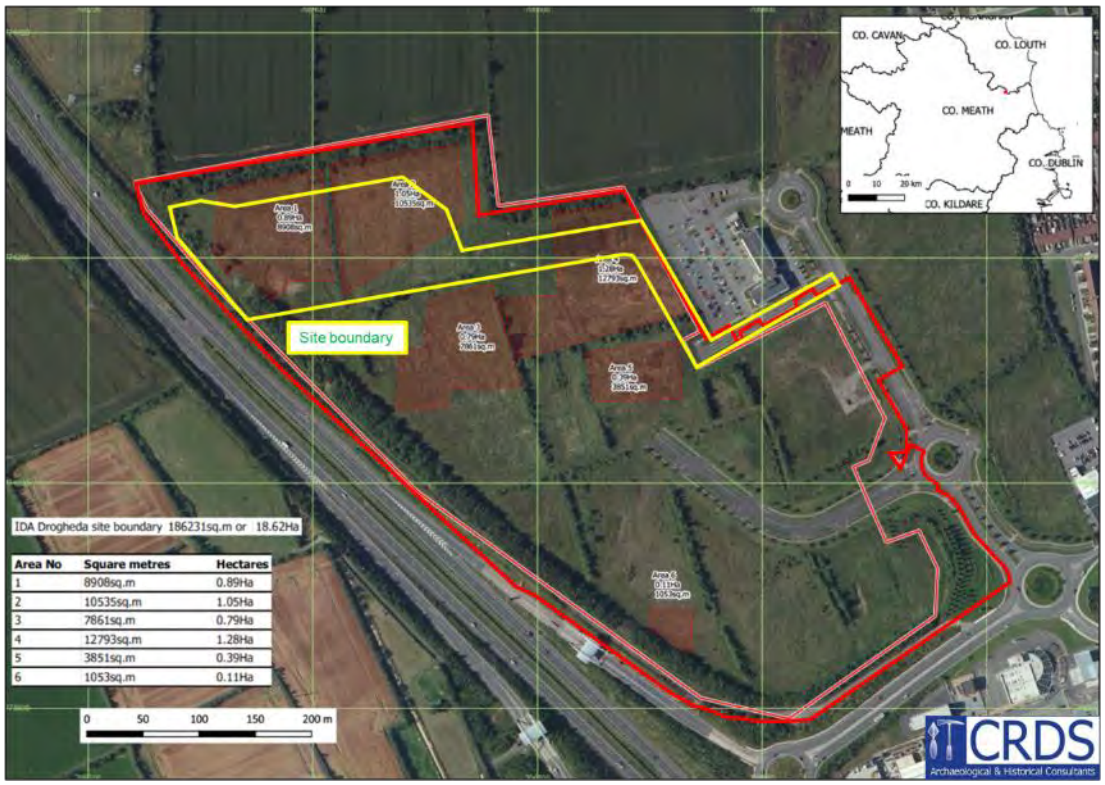

Figure 11.6 Summary of Areas identified for topsoil stripping and assessment

Figure 11.7 Summary of progress of Archaeological excavations and the additional areas identified for topsoil stripping and assessment (IAC Ltd; as of August 2020)

11.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development is described in Chapter 2.

11.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

11.5.1 Construction Phase

Potential impacts on archaeological and cultural heritage associated with the Proposed Development involves ground disturbance associated with the construction of the proposed GIS substation and the excavation of the trenches for the proposed cable installations. Ground disturbance associated with the site preparation and excavations would remove sub-surface archaeological features, should any survive within the site.

There will be no direct or indirect (visual) impacts on the architectural heritage features identified within the desktop assessment due to their distance from the site, local topography and intervening developments.

11.5.2 Operational Phase

There are no potential impacts on archaeological, architectural and cultural heritage expected as a result of the operation of the Proposed Development.

11.5.3 Do-nothing Scenario

There are no potential impacts on archaeological, architectural and cultural heritage expected in the case of a Do-nothing Scenario. The lands would not be excavated and any existing archaeology would be undisturbed.

11.6 REMEDIAL AND MITIGATION MEASURES

11.6.1 Construction Phase

Substantial sub-surface archaeological features have been identified within the site boundary through geophysical survey, archaeological testing and detailed topsoil stripping and assessment.

A comprehensive programme of archaeological excavation commenced on site in March 2020, under licence from the National Monuments Service (License no. 20E0082). The following programme of works is being implemented:

- A suitably qualified archaeological consultant (CRDS Ltd) has been appointed to oversee the works and undertake the required archaeological excavations, monitoring and reporting;
- A suitably qualified archaeological contractor (IAC Ltd) has been appointed to undertake the archaeological excavations;
- Topsoil stripping and assessment of Areas 1, 2 & 4 have been completed and a method statement agreed with the National Monuments Service for the excavation of these features.
- Excavation commenced in May 2020 and is on-going, with an anticipated completion date for site works of November 2020.

- The additional areas identified as requiring topsoil strip and assessment (Areas 7 & 8) are currently undergoing investigation.
- Any features encountered during this investigation will be assessed and a supplementary method statement will be agreed between IAC Ltd, CRDS Ltd and the National Monuments Service.
- A letter from the developer confirming the resources are in place to undertake the archaeological excavation, post-excavation, reporting and publication of the results has been included as part of the license application.
- Sufficient time will be afforded the archaeological team to complete their site excavations. The archaeological excavations will be sequenced to allow construction works to be phased.

The results of the excavation will serve to preserve the archaeological findings by records, and a full report outlining the results will be submitted to the National Monuments Service and to the relevant authorities.

Please note that the recommendations given here are subject to the ongoing approval of the National Monuments Service, Department of the Culture, Heritage and the Gaeltacht.

11.6.2 Operational Phase

No mitigation measures are required for archaeological, architectural and cultural heritage during the operational phase of the Proposed Development.

11.7 PREDICTED IMPACT OF THE PROPOSED DEVELOPMENT

11.7.1 Construction Phase

The construction phase of the Proposed Development will not impact directly on any sites included in the Record of Monuments and Places. However, significant archaeological remains identified during geophysical survey and testing have been confirmed and are currently subject to a programme of archaeological excavation. However, the implementation of mitigation measures detailed in Section 11.6.1, the archaeological features will be preserved by record, ensuring that the effect is ***neutral*** and ***imperceptible***.

11.7.2 Operational Phase

The operational phase of the Proposed Development is not predicted to have any impact on archaeological, architectural and cultural heritage.

11.8 RESIDUAL IMPACTS

Subject to the implementation of appropriate archaeological mitigation measures, no residual impacts on archaeological, architectural and cultural heritage are predicted.

11.9 CUMULATIVE IMPACTS

An assessment of the potential for cumulative effects on archaeological, architectural and cultural heritage to arise as result of other developments in the vicinity was undertaken through a review of archaeological works in the wider area, in particular

archaeological excavations undertaken as a result of planning conditions relating to developments. Upstanding archaeological remains listed in the Record of Monuments and Places have not been directly impacted by Proposed Development works in the area. However, substantial sub-surface archaeological remains have been encountered in the area in advance of development. These range in date from prehistoric to medieval.

The mitigation measures required in advance of developments, and currently being implemented in relation to the Proposed Development, will result in the preservation of the archaeological remains by record, and have / will significantly add to the academic record of the archaeology of the region. Therefore, the cumulative effect on archaeology is ***neutral*** and ***imperceptible***.

11.10 REFERENCES

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APPENDIX 11.1
RECORDED ARCHAEOLOGICAL MONUMENTS

The recorded monuments and places within c. 1km of the Proposed Development are listed below, all noted in the Record of Monuments and Places for Meath (source www.archaeology.ie).

RMP No.	ME020-021----
Site Type	Ringfort - rath
Townland	RATHMULLAN
ITM	706556, 773677
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	Circular area defined by earthen bank (diam. 40m) which has been removed WSW-NW. Modern trench outside bank NNW-ENE but no visible fosse. Original entrance at ESE. Notes 1969 – This rath is situated on a fairly high broad ridge which rises gradually and slightly above the rath to the southwest. Very good view except to southwest. Good pasture land. The interior is flat and almost circular in shape and is enclosed by a fairly large grass covered earthen bank which has been almost completely removed from WSW-W-NW. A deep modern drainage trench runs outside the bank from ENE-N-NNW. The original entrance was ese where there is a well-defined gap in the bank now blocked by bushes on the outside. A large beach tree grows inside the bank at ENE and smaller beech trees grow against the outside of the bank at NE. The interior is strewn with large branches – the result of cutting down the other large trees which formed a ring around the site at one time. Very slight traces of a possible fosse occur at south.

RMP No.	ME020-036----
Site Type	Enclosure
Townland	SHEEPHOUSE
ITM	706090, 774395
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	Site 3, Sheephouse, was found during test-trenching carried out along the route of the Northern Motorway, Gormanston–Monasterboice, Contract 7. It lay on a gradual slope running from north to south. The south-west corner of the site was on slightly higher ground. The excavation lasted for eight months, with the excavated area measuring approximately 110m north–south by 50m. Prior to excavation the site was agricultural land. Apart from a haul-road for construction traffic, which defined the site's eastern boundary, the surrounding area was predominantly agricultural. A pre-development monitoring brief was undertaken by V. J. Keeley Ltd during October 2000. During the initial mechanical removal of topsoil a circular ditch approximately 35m in diameter was noted. As a result of the initial findings, and in consultation with Dúchas and the National Museum of Ireland, it was agreed that an excavation would be required to offset adverse impacts on the archaeological resource by the permitted development. During later monitoring by IAC Ltd around the periphery of the aforementioned feature, a number of ditch and pit features were also recorded. The earliest recorded activity on Site 3 was represented by a narrow ditch, 0. 12m deep, 0. 45–0. 2m wide and 77. 35m long. The break of slope at the top was sharp. The sides were moderately steep with an imperceptible break of slope at the base. It was orientated south-west/north-east, running diagonally across the site. It was filled with a sandy silty loam with occasional flecks of charcoal. A pit truncated the above feature 2.8m from its northern end. This pit was subcircular in plan with a gradual break of slope at the top and gently sloping sides. The bottom was concave with an imperceptible break of slope at the base. It was 1.58m long, 1.24m wide and 0. 4m deep, and was orientated north-east/south-west. The main feature recorded was a large circular ditch towards the centre of Site 3.It measured 35. 5m east–west by 32.1m. A gap in the earthwork faced directly

	east and measured 4. 5m in length; this appeared to be the main entrance to the ditch interior. Finds recovered from fill layers included a flint thumb scraper, large quantities of flint débitage, nineteen pieces of worked chert (some pieces showing burning), and two pottery sherds of very coarse ware (late Bronze Age in design). A large number of cuts, pits, post-holes and cremation pits were also recorded within the area of excavation, both internal and external to the main ditch. A number of modern field drains truncated the archaeological layers. Detailed post-excavation analysis of this site is ongoing. The project was funded by Meath County Council. Source: Excavation report, Excavations 2000, p. 265, no. 778; 2001:1057 00E0811 IAC. Sheephouse 3.

RMP No.	ME020-036001-
Site Type	Cremation pit
Townland	SHEEPHOUSE
ITM	706122, 774354
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	Source: Excavations report 00E0811, Excavations 2000, p. 265, No. 778 Two cremation pits, one truncating the other, were revealed south of the enclosure. Three definite deposits of burnt human bone fragments were retrieved; the two from the later pit were separated by a small, charred, wooden plank. The pit was sealed by a dark brown, charcoal-rich, silty soil, in which a saddle quern had been deposited.

RMP No.	ME020-037----
Site Type	Habitation site
Townland	RATHMULLAN
ITM	707027, 773410
Revision	Scheduled for inclusion in the next revision of the RMP: No at present.
Description	The site is one of a series of potential prehistoric sites identified during pre-development testing along the route of the Northern Motorway, Contract 7. This site (Site 10) is located approximately 500m to the south of the Donore Road, south-west of the town of Drogheda. The site is on a low ridge, with a good view of the surrounding countryside, including the Bronze Age complex (Sites 15 and 16) currently under excavation to the south (see above No. 763). The site comprises a series of small pits and post-holes, with no obvious delimiting feature or structure. Identification of any structures is hampered by the site being transected by a modern field boundary ditch that cuts through what appears to be its central focus. Activity at the site appears to span a broad period of the earlier Bronze Age. To date, over 700 sherds of Bronze Age pottery have been recovered. Provisional identification suggests the presence of Beaker, Food Vessel, and Collared or Cordoned Urn pottery. Of particular interest are what appear to be the remains of several polypod bowls or similar, footed vessels. Five feet have been identified to date, in two distinct sizes, suggesting the presence of at least two vessels of this type. The function of the site is still unclear. It is least likely to be a funerary site. While cremated bone is present in many contexts, only small amounts are found, and there is no deliberation to their deposition. The absence of any hearths or clear structures at the site would appear to mitigate against a domestic function. However, the richest area of the site comprises a series of occupation-type layers delimited on the east side by a row of deep post-holes. Unfortunately, both these layers and the row of post-holes have been truncated by the field boundary ditch. Given the wealth of artefacts, and the span of time that they indicate, a ritual function for the site cannot be ruled out. Excavation at the site is ongoing. Source: Excavation licence no. 00E0813, Excavations 2000, p. 264, no. 775, 1035 Bolger, T. Riocht na Midhe, Vol. 13, p. 11-17 (Site 10)

RMP No.	ME020-038----
Site Type	Habitation site
Townland	RATHMULLAN
ITM	707179, 773243
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	The site was discovered during testing along the line of the Northern Motorway, Contract 7 (Drogheda Bypass). It was in an area of firm ground on a ridge fully intervisible with Platin promontory fort to the south. When first uncovered by mechanical excavator, during a test-trenching exercise, the site appeared as a scattering of small subsoil-cut features and dark spreads grouped within an area measuring approximately 40m east–west by 50m. Completion of topsoil-stripping revealed the site to measure 110m east–west by 75m. The site consisted of a series of three main foci — a circular structure, a large pit of undetermined function from which an assemblage of prehistoric worked timber was recovered, and a timber circle from which a large assemblage of good-quality lithics and prehistoric pottery was recovered. These foci, which were located at the eastern, northern and western boundaries of the site respectively, were surrounded by a large number of subsoil-cut features of various periods containing a wide variety of artefacts. To the south of the large pit a small cut was found to contain an almost whole but shattered pot of Western Neolithic type (Helen Roche, pers. comm.). To the north of the circular structure an area of metalworking ran under the eastern site boundary. This metallurgical activity is of as yet unknown date but is stratigraphically later than a narrow linear feature which ran uninterrupted in a meandering east to west line across the 110m length of the site and beyond both limits of site investigation. To the east of the timber circle an otherwise sterile pit revealed a barbed and tanged flint projectile head of superior quality, 0. 06m in length. The central area of the site, while containing an abundance of archaeological features, contained little immediate evidence of date or function. The circular structure at the east of the site measured 13.5m in diameter. Its outer limit was characterised by a shallow structural slot. This slot was first interpreted as a possible drip trench owing to the absence of any post-holes or depressions in its rounded base. Further investigation of the structure revealed a series of six shallow post-holes perfectly situated along the arc of this slot within an 8m interruption of its perimeter at the north-west. A second, south-east-orientated interruption of the slot was interpreted as an entrance. This opening was paved with a very fine, compact, metalled surface which ran through the entrance and was at a later date re-levelled and repaired with a surface of far inferior quality. Internally the roof of the structure was supported by a series of eight posts, represented by shallow truncated post-holes at approximately 1.5m intervals. These posts may have been augmented by a small, slightly off-centre post, which was also represented by a small, truncated, post-hole. This feature may, however, have belonged to a separate phase of activity as stratigraphic evidence did indicate some pre-structural features within and outside the building. The very base of a severely truncated burnt feature was excavated toward the centre of the building; this may represent a central hearth. The ceramic material recovered from the fills of the slot-trench structure has been tentatively identified as middle Bronze Age (Helen Roche, pers. comm.). At the northern limit of the site a large pit was excavated. This may have functioned as a well or as a deer-trap. As yet no direct parallels have been discovered for the feature. The pit had maximum dimensions of 7. 5m north-east/south-west by 4. 3m and was almost 2.8m in depth. It was largely sheer-sided except at the south-east, where a gently sloping ramp brought the feature to a depth of approximately 1.3m. The waterlogged nature of this pit preserved a wealth of organic material, including hazelnuts, twigs and a large assemblage of worked timbers (alder, willow and hazel: Ingelise Stuitje, pers. comm.). These timbers were sealed beneath a layer of compact clay which in turn lay beneath a deep layer of typical burnt mound material. This material contained large sherds of prehistoric pottery which appeared to be of Bronze Age date. The burnt mound material was identical in nature to and stratigraphically contemporary with

	the fill of a bath-shaped feature immediately to the south-west of the pit. This feature and a similar cut located 2.5m to the west have been tentatively identified as burnt mound troughs. The timber circle excavated at the western limit of the site was composed of twenty post-holes in a circle over 7m in diameter, with a further portico arrangement opening to the south-east and a central setting of four posts in a roughly square arrangement. Toward the rear of the timber circle a shattered urn base containing some flecks of burnt bone was discovered lying directly on subsoil. Perhaps evidence of a cut surrounding this find was removed by topsoil-stripping. Although the form of this post-hole complex is almost identical to the Grooved Ware circle excavated at Knowth, the artefactual evidence is confusing. Lithic material removed from the features included a stone axe, a deliberately placed end scraper and a large quantity of flakes and blades struck from prepared cores — evidence indicative of later Neolithic activity (Shane Delaney, pers. comm.). However, the large quantities of ceramic material recovered from the same features appeared to be of middle Bronze Age date, including Cordoned Urn pottery of particularly high quality (Helen Roche, pers. comm.). Discussion The archaeological material removed from Site 15/16 varies in quality, quantity and date. Interpretation of the stratigraphic evidence is ongoing and will finally depend on completion of specialist reports and the application of scientific dating techniques. All specialist artefactual interpretation given above is as yet unclarified. It is, however, clear that the area was the site of prolonged, intensive activity throughout the prehistoric period. The large enclosure, Site 17, Lagavooreen, is situated immediately to the south, and the site exists in a wide area of intervisibility with sites such as Platin fort. Public dissemination of the excavation findings has already begun with a short lecture to the Louth and Meath Historical and Archaeological societies in June 2001. Source: Excavation licence no. 00E0914, Excavations 2000, p. 261, No. 763.

RMP No.	ME020-038001-
Site Type	Timber circle
Townland	RATHMULLAN
ITM	707179, 773243
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	The timber circle excavated at the western limit of the site was composed of twenty post-holes in a circle over 7m in diameter, with a further portico arrangement opening to the south-east and a central setting of four posts in a roughly square arrangement. Toward the rear of the timber circle a shattered urn base containing some flecks of burnt bone was discovered lying directly on subsoil. Perhaps evidence of a cut surrounding this find was removed by topsoil-stripping. Although the form of this post-hole complex is almost identical to the Grooved Ware circle excavated at Knowth, the artefactual evidence is confusing. Lithic material removed from the features included a stone axe, a deliberately placed end scraper and a large quantity of flakes and blades struck from prepared cores — evidence indicative of later Neolithic activity (Shane Delaney, pers. comm.). However, the large quantities of ceramic material recovered from the same features appeared to be of middle Bronze Age date, including Cordoned Urn pottery of particularly high quality (Helen Roche, pers. comm.). Source: Excavation licence no. 00E0914, Excavations 2000, p. 261, No. 763. New timber circle discovery, Emmet Stafford, IAC Ltd. Archaeology Ireland 15 (3) 4.

RMP No.	ME020-038002-
Site Type	House - Bronze Age
Townland	RATHMULLAN
ITM	707179, 773243
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	The circular structure at the east of the site measured 13.5m in diameter. Its outer limit was characterised by a shallow structural slot. This slot was first interpreted as a possible drip trench owing to the absence of any post-holes or

	depressions in its rounded base. Further investigation of the structure revealed a series of six shallow post-holes perfectly situated along the arc of this slot within an 8m interruption of its perimeter at the north-west. A second, south-east-orientated interruption of the slot was interpreted as an entrance. This opening was paved with a very fine, compact, metalled surface which ran through the entrance and was at a later date re-levelled and repaired with a surface of far inferior quality. Internally the roof of the structure was supported by a series of eight posts, represented by shallow truncated post-holes at approximately 1.5m intervals. These posts may have been augmented by a small, slightly off-centre post, which was also represented by a small, truncated, post-hole. This feature may, however, have belonged to a separate phase of activity as stratigraphic evidence did indicate some pre-structural features within and outside the building. The very base of a severely truncated burnt feature was excavated toward the centre of the building; this may represent a central hearth. The ceramic material recovered from the fills of the slot-trench structure has been tentatively identified as middle Bronze Age (Helen Roche, pers. comm.). Source: Excavation licence no. 00E0914, Excavations 2000, p. 261, No. 763.

RMP No.	ME020-038003-
Site Type	Fulacht fia
Townland	RATHMULLAN
ITM	707179, 773243
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	Timbers were sealed beneath a layer of compact clay which in turn lay beneath a deep layer of typical burnt mound material. This material contained large sherds of prehistoric pottery which appeared to be of Bronze Age date. The burnt mound material was identical in nature to and stratigraphically contemporary with the fill of a bath-shaped feature immediately to the south-west of the pit. This feature and a similar cut located 2.5m to the west have been tentatively identified as burnt mound troughs. Source: Excavation licence no. 00E0914, Excavations 2000, p. 261, No. 763.

RMP No.	ME020-038004-
Site Type	Metalworking site
Townland	RATHMULLAN
ITM	707179, 773243
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	To the north of the circular structure an area of metalworking ran under the eastern site boundary. This metallurgical activity is of as yet unknown date but is stratigraphically later than a narrow linear feature which ran uninterrupted in a meandering east to west line across the 110m length of the site and beyond both limits of site investigation. To the east of the timber circle an otherwise sterile pit revealed a barbed and tanged flint projectile head of superior quality, 0. 06m in length. The central area of the site, while containing an abundance of archaeological features, contained little immediate evidence of date or function. Source: Excavation licence no. 00E0914, Excavations 2000, p. 261, No. 763.

RMP No.	ME020-038005-
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	707179, 773243
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	See ME020-038---- Source: Excavation licence no. 00E0914, Excavations 2000, p. 261, No. 763.

RMP No.	ME020-040----
Site Type	Excavation - miscellaneous
Townland	DONORE (Duleek Lower By.)
ITM	706150, 774313

Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	The site was discovered during monitoring along the line of the Northern Motorway, Contract 7 (Drogheda Bypass). It was in an area of firm ground on a north-facing slope rising up from the River Boyne. When first uncovered by mechanical excavator the site appeared as a scattering of small subsoil-cut features grouped within an area measuring 6m east–west by 9m. During the initial site clearance and investigation it became apparent that the majority of features initially identified as possibly archaeological were actually of modern origin, most being the result of recent machine activity. Only one feature was of an archaeological nature. This was a circular pit with a maximum depth of 0. 28m and a diameter of 0. 73m. It had steep sides and a flat base, giving it a broad 'U' shape in profile. The feature was filled with three deposits, all of which contained inclusions of burnt bone and charcoal, suggesting that it may have served as a domestic refuse-pit or even as a token cremation pit. No other archaeological features or deposits were discovered during the investigation of this site. The pit may represent the remains of a phase of prehistoric activity, the majority of which has not survived in the archaeological record. It is possibly more likely, however, that the pit is related to the large prehistoric enclosure, Site 3 Sheephouse (see No. 1057 below, 00E0811), excavated by Dermot Nelis approximately 40m to the north. Source: Excavation licence no. 01E0400, Excavations 2001, p. 296, No. 961.Donore 3.

RMP No.	ME020-041----
Site Type	Fulacht fia
Townland	DONORE (Duleek Lower By.)
ITM	706190, 774257
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	The site was discovered during monitoring along the line of the Northern Motorway, Contract 7 (Drogheda Bypass). It was in an area of firm ground on a north-facing slope rising up from the River Boyne. When first uncovered by mechanical excavator the site appeared as a scattering of small subsoil-cut features and a pair of large pits grouped within an area measuring 20m north–south by 10m. The pair of large pits appeared to form the focus of the site. Both were filled with a loose, darkish grey soil, C13, with a high composition of burnt stone in a charcoal-rich matrix. This burnt mound-like material also filled a depression which formed a link between the two features. The morphology of the pits was similar; both were roughly suboval in plan with gently sloping, rounded sides leading to undulating rounded bases. The larger of the two pits measured 2.4m by 1.55m by 0. 36m deep. The smaller was 1.62m by 0. 6m by 0. 1m deep. The site overall was heavily truncated by machine activity and any possible archaeology which may have been present to the east of these pits would have been removed by bulldozer in the topsoil-stripping process. Three other subsoil-cut features were excavated. The morphology and sterile fills of these features did not support any particular interpretation of the site's date or function. Source: Excavation licence no. 01E0398, Excavations 2001, p. 295, No. 959. Donore 1.

RMP No.	ME020-042----
Site Type	Habitation site
Townland	DONORE (Duleek Lower By.)
ITM	706254, 774183
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	The site was discovered during monitoring along the line of the Northern Motorway, Contract 7 (Drogheda Bypass). It was in an area of firm ground on a north-facing slope rising up from the River Boyne. When first uncovered by mechanical excavator the site appeared as a scattering of small subsoil-cut

	features, including one possible structural slot-trench, grouped within an area measuring 40m east–west by 50m. The distribution of archaeological features across the site formed no discernible pattern. Two groups of features, which in the absence of artefactual evidence cannot be identified as contemporary, were excavated. These two groups were situated in the north-eastern and south-western corners of the site. A minimum distance of over 10m separated the two groups of features and the rest of the site appeared to be archaeologically sterile. The south-western group consisted of ten subsoil-cut features grouped within an area approximately 15m east–west by 10m. Most of these features were irregular in plan, with gently sloping sides and uneven or rounded bases. The morphology of two features was relatively post-hole-like. These features, which were 0. 15m and 0. 25m deep respectively, were both roughly circular or oval with sheer sides and flat bases. The stratigraphy of their fills did not, however, support a structural interpretation, nor was there any other surviving structural evidence in the immediate vicinity. Although more than half of the features in this group contained varying amounts of charcoal, none of them could be directly interpreted as hearths or showed any sign of burning in situ. One feature, which was suboval in plan, 0. 27m deep and with a maximum diameter of 0. 9m, was filled with a burnt stone and charcoal-rich deposit which may have represented the dumped residue of an open fire. The fills of two other rounded features, C4 and C26, also contained quantities of burnt stone and charcoal. No diagnostic artefacts were retrieved from these features. One finely struck flint flake from a prepared core, with a modern fracture, was retrieved from the topsoil in this area. The north-eastern group consisted of sixteen subsoil-cut features grouped within an area measuring approximately 30m north–south by 20m. In common with the features in the south-western group, the fills of over half of these features contained varying amounts of charcoal. None of them, however, contained traces of burnt or heat-shattered stone such as that removed from features in the south-western group. This group of features was artefactually richer than those to the south-west. Traces of burnt bone were recovered from the fill of a shallow possible rubbish-pit situated at the south-east of the group. A flake of struck flint was recovered from the upper fill of an irregular, steep-sided feature. More pieces of flint and some poorly preserved sherds of apparently prehistoric pottery were recovered from the largely sterile, grey silty clay fill of a slot-trench excavated at the centre of this group. The profile and dimensions of the slot varied widely from a shallow, almost bowl-shaped ‘U’ with a minimum depth of 0. 12m to a more sheer-sided near-‘V’ profile with a maximum depth of 0. 29m. It was 0. 31–0. 6m wide. The function of the slot remains unclear. It appeared to be a structural slot-trench encompassing a roughly oval area with a subrectangular annexe to the west. These areas, which appeared to form an annexed or figure-of-eight structure, had combined dimensions of 7. 75m east–west by 5. 8m. However, little further structural evidence supported this appearance. No evidence of stake- or post-holes was uncovered at the base of, or within the areas encompassed by, the slot. No interruption suggestive of an entrance occurred at any point in the sweep of either arc. At the extreme western side of the smaller arc a deposit of medium-sized stones contained within the fill was removed from the trench. These stones could be tentatively interpreted as a drainage feature at the threshold of a slot-built structure. Immediately to the north of these stones a small concentration of charcoal, which could represent an accumulation of charcoal blown through the possible entrance from an internal hearth, directly overlay the upper fill of the slot. Only one internal feature (C52) was uncovered within the possible structure. The survival of only one internal feature may be the result of post-depositional truncation or an original absence of internal supports. The internal feature was a shallow, subcircular, bowl-like pit 0. 15m in depth with a maximum diameter of 0. 5m. It was filled with a compact sterile sandy clay which revealed no indication of the feature’s function.

	The presence of an apparently structural slot combined with randomly scattered subsoil cuts, some containing burnt bone, charcoal, burnt and heat-shattered stone with some flakes of struck flint and sherds of prehistoric pottery, suggests that Donore 2 may have been an occupation site at one or several stages in prehistory. Immediately downhill of the site, 200m to the north, a large, possibly Bronze Age enclosure (Sheephouse, see No. 1057 below, 00E0811) has recently been excavated by Dermot Nelis, and 300m further to the north an enclosure site dating from the Neolithic to the Iron Age or Early Christian period (Sheephouse, see No. 1056 below, 00E810) has also been recently excavated by Declan Moore. Source: Excavation licence no. 01E0399, Excavations 2001, p. 295-6, No. 960. Donore 2.

RMP No.	ME020-052----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	706634, 773696
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	A single north–south-running ditch and three 19th–20th-century field drains were exposed during monitoring of topsoil-stripping associated with the proposed toll plaza at Rathmullan, Co. Meath (No. 1425 above, 02E0745). The ditch, exposed at a height of 60. 294m OD, was 27m long and 1.4m wide and extended to a depth of 0. 21m; it had been filled with a compact, grey, dauby clay. A rimsherd of a late medieval vessel and a large fragment of a possible late medieval floor tile were recovered from the fill during monitoring. The ditch had been cut by three field drains. A number of finds recovered from the fill of two of the drains indicated that they dated to the 19th–20th centuries. Source: Excavation licence no. 02E0870, Excavations 2002, p. 423, No. 1512.

RMP No.	ME020-053----
Site Type	Fulacht fia
Townland	RATHMULLAN
ITM	706525, 773972
Revision	Scheduled for inclusion in the next revision of the RMP: Yes
Description	Two oval pits were exposed during the monitoring of topsoil-stripping associated with the construction of the northern ramp of the proposed toll plaza at Rathmullan, Co. Meath. Both pits had been filled with a black/dark grey loam containing frequent inclusions of angular and heat-shattered stone and are likely to represent outlying pits from a potential fulacht fiadh that lay outside the site to the north or south. Pit F004 had been cut by a post-medieval/modern field drain, oriented north-east/south-west. No finds were recovered during the excavation, although a single piece of animal bone was recovered from the base of F004. Source: Excavation licence no. 02E1245, Excavations 2002, p. 433, No. 1513.Rathmullan 11.

RMP No.	ME020-056----
Site Type	Habitation site
Townland	RATHMULLAN
ITM	707045, 773319
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	The site is one of a series of potential prehistoric sites identified during pre-development testing along the route of the proposed Northern Motorway, Contract 7. Site 12 was on a low rise 550–650m south of the Donore Road in the townland of Rathmullan, Co. Meath, and covered an area of approximately 15m by 10m. The site was on a gentle south-facing slope and had clear and unobstructed views south as far as the Dublin to Belfast railway line. It was clearly intervisible with sites 10, 13, 14, 15–16 and 17. Three main phases of early Bronze Age activity have been identified at the site to date. Phase I

	The earliest activity was represented by a single pit, C23, in the centre of the site. C23 was subangular in shape, measuring 2m by 1.4m with an original depth of 0. 86m. It was heavily truncated by later phases of activity and was filled with a series of slightly waterlogged deposits. A substantial quantity of unburnt bone, some antler and one fragment of shell were recovered from the fills of this pit. Cursory examination of the bone indicated damage consistent with butchery, but this determination needs to be confirmed by specialist analysis of the material. The amount of unburnt bone and the charcoal inclusions suggest that the fills were refuse layers. Phase II The second phase of occupation was distinguished by two very large pits, C14 and C17, in the centre and southern margins of the site respectively. The larger of the two, C14, was subrounded in shape and measured 3.55m by 3.5m, with a depth of 0. 6m. It heavily truncated the earlier Phase I pit. Its lower fills also produced unburnt bone and shell and were quite similar in composition to the fills of C23.The fill C12 was made up of a dark brownish-grey silty clay, with frequent charcoal lumps and flecks. A large quantity of early Bronze Age pottery (529 sherds) was recovered, most of which appears to be of Beaker type, though this has still to be confirmed by a specialist. The assemblage included 34 decorated sherds, 30 rim sherds, nine base sherds, one possible handle and five feet of polypod vessels. A quantity of worked flint was also recovered (31 pieces in total), including one blade, three scrapers and one unfinished arrowhead. The pit was partially sealed by a metalled surface relating to Phase III. Though polypod vessels are a recognised part of the Beaker assemblage and are associated with the Wessex/Middle Rhine group of Beaker wares, they are still considered to be a very rare occurrence on Beaker sites. It should be noted, however, that the best-known example of this type of vessel in Ireland comes from the excavations at Newgrange. The most unusual find from the site, though, is what would appear to be the handle of a pottery vessel, recovered from the upper fill of C14. Handled Beaker vessels are well documented from British contexts but are not normally associated with the Beaker assemblage in Ireland. Further comment must await specialist analysis of this item. The second pit, C17, was oval and measured 2.4m by 1.6m, with a depth of 0. 39m. Its fills were characterised by burnt material (mainly charcoal and burnt bone). Again a significant quantity of early Bronze Age pottery was recovered (c. 80 sherds), most of which appears to be of Beaker type, though this has still to be confirmed by a specialist. This assemblage also included another foot from a polypod vessel, giving a total of six examples from this site. The pit was sealed by a metalled surface relating to Phase III, which had partially slumped into it. In the north-east corner of the site a pair of shallow slot-trenches aligned north-west to south-east were identified. However, any clear evidence of an associated structure was lost owing to the heavy truncation around the site boundary caused by machine activity prior to excavation. As a result of this truncation it was not possible to ascertain the full extent of either trench. Phase III Phase III was the final phase of activity at the site. It was mainly defined by the rough metalled surface, C20, which measured 11m by 7m and sealed both of the Phase II pits. However, the eastern and southern edges of the surface had been heavily truncated by machinery prior to any excavation on site, so that its original extent could not be determined. Contemporary with the metalled surface was a medium-sized stone-filled pit, C16. It was suboval in shape, measuring 0. 85m by 0. 45m, with a depth of 0. 37m. It truncated both the large Phase II pit, C14, and the earlier Phase I pit, C23.The fill of the pit was very stony and produced a small quantity of Beaker-type pottery. A second small pit (C5) in the north-east corner of the site slightly truncated the terminal of the western slot-trench. This pit measured 1.03m by 0. 79m with a depth of 0. 21m, and again had a very stony fill, with a high proportion of burnt stone. Patches of pinkish-brown burnt clay along the edges of the cut could suggest some in situ burning. Despite the large quantities of charcoal from the

	fills of the various features at the site, this is the only indication of in situ burning found. Discussion Though Site 12 was small, the material it produced was extremely rich. The overall impression is one of domestic activity, with the various pit fills probably being the result of the clearance of accumulated habitation debris. Any clear evidence of an associated structure, as indicated by the pair of aligned slot-trenches C8 and C10, was, however, lost owing to the heavy truncation around the site by machinery prior to excavation. The pottery evidence indicates a late Neolithic to early Bronze Age date for the site. The rare finds of the remains of polypod vessels and a handled vessel, as well as the sheer quantity of pottery from the site, may suggest rich/high-status occupation. It is also worth noting that a high-quality and rich Beaker assemblage was also present at Site 10, less than 100m to the north. Though there were two later phases of occupation at Site 10, it is possible that the Beaker material from Phase I at this site may indicate broad contemporaneity with the neighbouring Site 12.However, detailed specialist analysis of the material from both sites is needed to confirm this. One final feature that links both Sites 10 and 12, as well as Site 13 to the south, is (with the possible exception of C5) the absence of any evidence for a hearth or any in situ burning at any of the sites despite the frequent presence of burnt and charcoal-rich deposits. Source: Excavation licence no. 01E0294, Excavations 2001, p. 326-7, No. 1036. Bolger, T. 2002 Three sites on the M1 Moterway at Rathmullan, Co. Meath. Ríocht na Mídhe, 13, 8-17.

RMP No.	ME020-057----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	707107, 773283
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	Description: First identified in topsoil stripping (00E0282) for the M1 Motorway (al Fraihat 2000, 4), it was excavated (01E0295) as Rathmullan 13, the name of which was later changed to Rathmullan 7. A Late Neolithic phase consisting of two pits and a concentration of post and stake-holes was identified. A large pit (diam. 1.6-1.64m; D 0. 58m) contained fills with flecks of charcoal and bone and a complete Grooved Ware bowl and other Grooved Ware fragments. Radiocarbon dating indicates a range of 2840-2470 BC. Late Neolithic pottery and flint artefacts, including debitage suggest an industrial use, but the deposition of a complete pot is interpreted as ritual activity. (Bolger 2002, 2011) Compiled by: Michael Moore Date of upload: 21 October, 2015 References: 1.Bolger, T. 2002 Three sites on the M1 Moteroway at Rathmullan, Co. Meath. Ríocht na Mídhe, 13, 8-17. 2.Bolger, T. 2011 M1 Northern Motorway: Gormanston – Monasterboice (Drogheda Bypass) Platin to Oldbridge; Chainage: 21600-24800 Contract 7 01E0295: Rathmullan 7 (formerly Rathmullan 13) Final Report, Unpublished, Irish Archaeological Consultancy 3.al Fraihat, M. 2000 Archaeological pre-construction topsoil stripping Northern Motorway Newtown – Monasterboice – Gormanstown, Co. Meath. CH24500, Oldbridge townald – CH2200, Platin Townland. Licence No. 00E0282.Unpublished report, Valerie J. Keeley.

RMP No.	ME020-058----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	706663, 773655
Revision	Scheduled for inclusion in the next revision of the RMP: No

Description	Site 1, Rathmullan, was identified during monitoring along the route of the Northern Motorway, Gormanston–Monasterboice, Contract 7. It was immediately south of the Donore Road at the western edge of the motorway way-leave. The area of excavation measured approximately 11m east–west (maximum) by 10m (maximum). Prior to excavation the site consisted of farmland. All topsoil and ploughsoil were removed by machine in advance of excavation. The earliest evidence for activity consisted of a ditch aligned roughly north–south. From the southern terminus it ran northwards for 3.2m before turning in a north-west direction. It then curved gradually into a northern direction again. The total excavated length of the ditch was 8. 4m. It was deepest and widest at the northern end (0. 3m deep x 0. 8m wide) and became shallower to the south (0. 14m deep). At the southern terminus was a post-hole 0. 42m in diameter and 0. 2m deep. The next phase of activity consisted of a post-medieval east–west-aligned field drain. The cut for the drain was 8. 5m long within the site limits, but it continued beyond the western boundary. It was 0. 4m wide and had a maximum recorded depth of 0. 2m. The sides were almost vertically cut and broke into a shallow concave base. It truncated the north–south-aligned ditch (above) 1.2m from its southern terminus. The fill of this drain consisted of subangular and subrounded stones with average dimensions of 0. 22m by 0. 18m by 0. 08m. These stones were poorly sorted and were not regularly placed in the cut. Mixed between the stones was a mid-brown silty clay. The fill contained lumps of red brick and sherds of post-medieval pottery. Post-excavation analysis is ongoing. The project was funded by Meath County Council. Source: Excavation licence no. 01E0383, Excavations 2001, p. 322, No. 1030 (Site 1).

RMP No.	ME020-059----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	706330, 774094
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	A five-week excavation was carried out on a prehistoric site discovered during topsoil-stripping in advance of the Northern Motorway, Gormanston–Monasterboice, Contract 7. Excavation began on 10 April 2001 and was completed on 15 May 2001. The site was approximately midway between the Oldbridge and Donore roads and was at the western edge of the motorway way-leave. The area of excavation measured approximately 35m north–south (maximum) by 19m (maximum). Prior to excavation the site consisted of agricultural land. The earliest evidence for activity within the site boundary consisted of an east–west-aligned curvilinear ditch with an approximate length of 18. 9m. From the western terminus it extended eastwards for approximately 8. 4m before starting to gradually curve southwards. It had a maximum recorded depth of 0. 51m, which was noted at the western end of the ditch, with the average depth being 0. 35m. The maximum width of the ditch was 0. 8m. The next phase of activity consisted of a Bronze Age pit that truncated the curvilinear ditch. It measured 1.2m in length, 1.15m in width and 0. 86m in depth. The northern side was quite smooth and was nearly vertical. The other sides were also quite steep but were slightly irregular. The sides broke gradually into a shallow concave base, which was under the modern water-table. The final phase consisted of a series of shallow pits from which no diagnostic material was recovered. All of these pits were located to the south of the curvilinear ditch. A series of relatively modern features such as field drains represent the last period of physical activity on the site. Excavation and post-excavation work have revealed that the site most likely dates from the Bronze Age. It is hoped that the ongoing post-excavation process

	and stratigraphic interpretation of the site will facilitate more detailed interpretation. This project was funded by Meath County Council. Source: Excavation licence no. 01E0386, Excavations 2001, p. 322-3, No. 1031.Site Rathmullan 4

RMP No.	ME020-060----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	706338, 774072
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	Site 5, Rathmullan, was identified during monitoring along the route of the Northern Motorway, Gormanston–Monasterboice, Contract 7. The site was approximately midway between the Oldbridge and Donore roads, at the southernmost boundary of Site 4, Rathmullan (see No. 1031 above, 01E0386). Prior to excavation the site consisted of agricultural land. Site 5 consisted of a shallow subcircular pit (0. 68m x 0. 48m) with a recorded depth of 0. 14m. The north and south sides of the pit were quite steeply sloped, while the east and west sides were more gently sloped. They broke into an uneven, stony base. It was filled with a grey-brown silty, slightly sandy, friable clay that contained some orange mottling. It also contained occasional flecks of charcoal and quite frequent small subangular stone inclusions. A diamond-shaped worked stone was recovered from the fill. Post-excavation analysis is ongoing. This project was funded by Meath County Council. Source: Excavation licence no. 01E0387, Excavations 2001, p. 323, No. 1032.Site 5 Rathmullan

RMP No.	ME020-061----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	706653, 773705
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	A three-week excavation was carried out on Beaker and post-medieval features in advance of the Northern Motorway, Gormanston–Monasterboice, Contract 7. The site was immediately north of the Donore Road to the south-west of the way-leave of the motorway. The area of excavation measured approximately 19m north–south by 19m (maximum). The site was on flat ground, which sloped off to the east of the excavated area. The areas surrounding the site were stripped of topsoil and were found to be of no archaeological significance. Prior to excavation the site consisted of agricultural land. Excavation began on 23 April 2001 and was completed by 16 May 2001.All features were excavated down to the natural subsoil. The earliest evidence for activity on the site consisted of a pit in the north of the site. It measured 0. 63m south-west/north-east by 0. 51m and 0. 18m in depth (maximum). It was an isolated feature and cut the natural subsoil. It was suboval in plan with a sharp break of slope; it was vertical-sided in the south and south-west, and more gradual in the east, west and north-west of the feature. The base was flat with a slightly undulating bottom. It was filled primarily with a thin deposit of a compact mid-grey silty clay, with inclusions of small pebbles and charcoal flecking. The secondary and main fill consisted of a compact mottled blackish-brown silty clay, with occasional pieces of decayed sandstone and mudstone. Finds from this fill included numerous sherds of Beaker pottery, five flint scrapers (two burnt) and a hammer-stone. A further four pits were excavated to the south-west of the above feature. These did not contain such diagnostic material, but the nature of their fills suggests that they were prehistoric. They could not be stratigraphically linked, and cut the natural subsoil only. The third phase of activity incorporated the remains of post-medieval/modern drainage and agricultural activity. All features cut the natural subsoil.

	Post-excavation analysis is ongoing. The project was funded by Meath County Council. Source: Excavation licence no. 01E0390, Excavations 2001, p. 323, No. 1033.Site 9 Rathmullan.

RMP No.	ME020-062----
Site Type	Excavation - miscellaneous
Townland	RATHMULLAN
ITM	706722, 773791
Revision	Scheduled for inclusion in the next revision of the RMP: No
Description	A two-month rescue excavation was carried out on a site consisting of possible Neolithic and post-medieval activity in advance of the construction of the Northern Motorway, Contract 7. Twenty-nine negative archaeological features were recorded, including a possible cremation pit containing substantial quantities of Neolithic pottery. The site was in the townland of Rathmullan, immediately north of the Donore Road, on flat agricultural land approximately 100m east of Site 9 (see No. 1033 above, 01E0390). The area of excavation measured approximately 70m north–south by 25m on average. Excavation began on 14 March 2001.A conservation specialist was required on site for two days to supervise the removal of a nearly complete Neolithic pot, and this has subsequently been excavated in the laboratory. All features were excavated to natural subsoil. Excavation and post-excavation analysis have revealed that activity on the site dates from the Neolithic period onwards. The earliest activity has been assigned to groups of pits cutting the natural subsoil across the site. A pit which contained a large quantity of Neolithic material is included in this phase. It is suggested that the next phase of activity on site relates to a north–south ditch which was approximately 67m in length. It varied in width from 0. 55m to 1.9m, and was wider to the south of the site. It was also deeper to the south of the site, where it reached 0. 8m in depth, while the northern sections of the ditch averaged 0. 25m in depth. Seven fills were recorded in this ditch. The final phase of activity on site related to a number of post-medieval ditches orientated roughly east–west, a plough-furrow and a shallow pit. Post-excavation analysis is ongoing. The project was funded by Meath County Council. Source: Excavation licence no. 01E0433, Excavations 2001, p. 323-4, No. 1034. Rathmullan 8.

APPENDIX 11.2
RECORDED ARCHAEOLOGICAL FINDS

The recorded archaeological finds in the vicinity of the site are listed below, all noted in the National Museum of Ireland files, Kildare Street, Dublin 2, in local journals, or in other published catalogues of prehistoric material: Raftery (1983), Eogan (1965; 1983; 1994), Harbison (1968; 1969a; 1969b) and the Irish Stone Axe Project Database. The following townlands were assessed - Donore, Oldbridge, Platin, Rathmullan and Sheephouse,

NMI 1930:217-222	Oldbridge, Co. Meath
Tools Tools for building currachs	

RIA1899:55	Oldbridge/Sheephouse, Co. Meath
Bell Discovered in 1899 by John Farrell resting on the rock covered by some stones in a few feet from the surface of the ground in a quarry at Sheephouse, near Oldbridge, together with a Processional Cross and Pricket Candlestick of medieval date. (Armstrong 1915).	

RIA1899:54	Oldbridge/Sheephouse, Co. Meath
Pricket Candlestick Discovered in 1899 by John Farrell resting on the rock covered by some stones in a few feet from the surface of the ground in a quarry at Sheephouse, near Oldbridge, together with a Processional Cross and Bell of medieval date. (Armstrong 1915). Copper alloy candlestick, spike candlestick, bronze height to top of spike 1 foot, diameter of bowl 4. 5inches, diameter of base 3 15/16 inches.	

RIA1899:53	Oldbridge/Sheephouse, Co. Meath
Processional Cross Discovered in 1899 by John Farrell resting on the rock covered by some stones in a few feet from the surface of the ground in a quarry at Sheephouse, near Oldbridge, together with a Pricket Candlestick and Bell of medieval date. (Armstrong 1915).	

SA1898:115	Oldbridge, Co. Meath
Spur Iron rowel spur, ornate, well preserved, decorated iron rowel spur inlaid with silver. Five pointed star rowel attached to angular stem. One ornate buckle attachment remaining and thre hooks for straps attached to figure of eight terminals.	

R1547	Oldbridge (Between Oldbridge and Drogheda), Co. Meath
Boat Boat oak length 18feet9inches; breadth 2 feet 10inches. Found in the bed of the river Boyne, between Oldbridge and Drogheda, about 20 years ago.	

3596:wk729	Oldbridge (Between Oldbridge and Drogheda), Co. Meath
Boat Boats and canoes, generally formed out of a single piece of timber. A fairly well preserved piece of oak. It was found about the year 1844, in the bed of the river Boyne, near the southern bank, in deep water, between Oldbridge and Drogheda. Length 18 feet 9 inches; average width 2 feet 10 inches, height in the side about 20 inches. Through its floor or bottom are three artificial apertures the use of which remains to be explained.	

NMI Record	Oldbridge, Co. Meath
Food vessel Intact food vessel bowl, found in the cist burial at Oldbridge house (PRIA 1897C, 570-4).	

NMI Record	Oldbridge, Co. Meath
Jet Necklace Found in the cist burial at Oldbridge house (PRIA 1897C, 570-4).	

NMI Record	Oldbridge, Co. Meath
Unburnt skeletal remains Found in the cist burial at Oldbridge house (PRIA 1897C, 570-4).	

Published Record	Oldbridge, Co. Meath
Beads Fusiform beads found with a bowl food vessel a short distance upstream from the mouth of the River Boyne (Coffey 1895; Eogan 1994).	

NMI 2010:323	Rathmullan (River Boyne at Drogheda), Co. Meath
Trough Wooden dugout trough. Large oak trunk which has been dugout. One end is a perfect semi-circle in profile, the round part of the semi-circle forming the base of the dugout, and a lug has been carved out, and projects from the end of the object. Would not function well as a boat.	

APPENDIX 11.3
EXCAVATIONS

The excavation bulletin website (www.excavations.ie) was consulted to identify previous excavations that have been carried out within the study area. This database contains summary accounts of excavations carried out in Ireland from 1970 to 2018 in the vicinity of Rathmullan.

2000:0775 - NORTHERN MOTORWAY, CONTRACT 7, SITE 10, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 00E0813
Author: Teresa Bolger, Irish Archaeological Consultancy Ltd, 8 Dungar Terrace, Dun Laoghaire, Co. Dublin.
Site type: Bronze Age
ITM: E 629597m, N 927837m
Lat, Long: 53.708975, -6.388235

The site is one of a series of potential prehistoric sites identified during pre-development testing along the route of the Northern Motorway, Contract 7. This site (Site 10) is located approximately 500m to the south of the Donore Road, south-west of the town of Drogheda. The site is on a low ridge, with a good view of the surrounding countryside, including the Bronze Age complex (Sites 15 and 16) currently under excavation to the south (see above No. 763).

The site comprises a series of small pits and post-holes, with no obvious delimiting feature or structure. Identification of any structures is hampered by the site being transected by a modern field boundary ditch that cuts through what appears to be its central focus.

Activity at the site appears to span a broad period of the earlier Bronze Age. To date, over 700 sherds of Bronze Age pottery have been recovered. Provisional identification suggests the presence of Beaker, Food Vessel, and Collared or Cordoned Urn pottery. Of particular interest are what appear to be the remains of several polypod bowls or similar, footed vessels. Five feet have been identified to date, in two distinct sizes, suggesting the presence of at least two vessels of this type.

The function of the site is still unclear. It is least likely to be a funerary site. While cremated bone is present in many contexts, only small amounts are found, and there is no deliberation to their deposition. The absence of any hearths or clear structures at the site would appear to mitigate against a domestic function. However, the richest area of the site comprises a series of occupation-type layers delimited on the east side by a row of deep post-holes. Unfortunately, both these layers and the row of post-holes have been truncated by the field boundary ditch. Given the wealth of artefacts, and the span of time that they indicate, a ritual function for the site cannot be ruled out.

Excavation at the site is ongoing.

2001:968 - NORTHERN MOTORWAY (GORMANSTON TO MONASTERBOICE), GORMANSTON/ SARSFIELDSTOWN/ CLARISTOWN/ BALLOY/ PLATIN/ LAGAVOOREN/ RATHMULLAN/ DONORE/ SHEEPHOUSE/ OLDBRIDGE, MEATH

SMR No.: N/A
Licence No.: 00E0282
Author: Kieran Campbell, 6 St Ultan's, Laytown, Drogheda, for Valerie J. Keeley Ltd.
Site type: Monitoring
ITM: E 716215m, N 766768m
Lat, Long: 53.637790, -6.242594

This licence was originally issued to cover topsoil-stripping on the route of the Northern Motorway (Gormanston to Monasterboice) in Tullyallen and Mell townlands, Co. Louth, for a period of nine weeks from 2 May 2000. The licence was ultimately extended to 30 September 2001 to cover monitoring of the entire route of the motorway in County Louth, with the associated link-roads and approaches to the Boyne Bridge, and also for monitoring on certain sections of the motorway in County Meath. Monitoring of topsoil-stripping took place on certain sections of the motorway route in County Meath between 2 June 2000 and 28 February 2001 under this licence. Also included was the monitoring of the excavation of two coffer-dams for the pylons of the Boyne Bridge. However, archaeological excavation by the writer was limited to three small sites uncovered at Oldbridge on the access road to the Boyne Bridge (Excavations 2000, Nos 769–71; 00E0929, 00E0938 and 00E0939). All other sites uncovered under this licence were excavated by Ian Russell, Dermot Nelis, Emmet Stafford and Rob Lynch.

The monitoring was carried out on two separate sections of the motorway at the south and north ends of the route south of the River Boyne in County Meath. At the south end six potential archaeological sites were noted during monitoring between 10 October and 7 November 2000 on a 3.2km length of the motorway from Gormanston to Balloy. These sites were subsequently excavated by Ian Russell in 2001.

Licence no. Site
01E0041 Sarsfieldstown 1, see No. 1049 below;
01E0042 Sarsfieldstown 2, see No. 1050 below;
01E0038 Claristown 1, see No. 946 above;
01E0039 Claristown 2, see No. 947 above;
01E0040 Claristown 3, see No. 948 above;
01E0037 Balloy 1, see No. 944 above.

At the northern end of the motorway in County Meath monitoring took place from 10 October 2000 to 28 February 2001 on a 3.7km length of the route from Platin north to the River Boyne at Oldbridge. Archaeological sites had already been recorded over much of this section of road during test-trenching by Valerie J. Keeley Ltd in September–October 2000. Additional material came to light during topsoil-stripping and the subsequent excavations are reported in this volume.

Licence no. Site
01E0267 Oldbridge 4 D. Nelis, see No. 1017 below;
01E0449 Sheephouse 2 E. Stafford, see No. 1056 extension below;
01E0398 Donore 1 R. Lynch, see No. 959 above;
01E0399 Donore 2 R. Lynch, see No. 960 above;
01E0400 Donore 3 R. Lynch, see No. 961 above;
01E0383 Rathmullan 1 D. Nelis, see No. 1030 below;
01E0433 Rathmullan 9 D. Nelis, see No. 1034 extension below;
01E0914 Lagavooren 15 E. Stafford, see No. 1039 extension below;
01E0396 Lagavooren 17 E. Stafford/D. Murphy, see No. 1005 below.

2001:1030 - SITE 1, RATHMULLAN, MEATH
SMR No.: N/A
Licence No.: 01E0383
Author: Dermot Nelis, IAC Ltd, 8 Dungar Terrace, Dun Laoghaire, Co. Dublin.
Site type: Prehistoric
ITM: E 706722m, N 773628m
Lat, Long: 53.701432, -6.383729

Site 1, Rathmullan, was identified during monitoring along the route of the Northern Motorway, Gormanston–Monasterboice, Contract 7. It was immediately south of the Donore Road at the western edge of the motorway way-leave. The area of excavation measured approximately 11m east–west (maximum) by 10m (maximum). Prior to excavation the site consisted of farmland. All topsoil and ploughsoil were removed by machine in advance of excavation.

The earliest evidence for activity consisted of a ditch aligned roughly north–south. From the southern terminus it ran northwards for 3.2m before turning in a north-west direction. It then curved gradually into a northern direction again. The total excavated length of the ditch was 8.4m. It was deepest and widest at the northern end (0.3m deep x 0.8m wide) and became shallower to the south (0.14m deep). At the southern terminus was a post-hole 0.42m in diameter and 0.2m deep.

The next phase of activity consisted of a post-medieval east–west-aligned field drain. The cut for the drain was 8.5m long within the site limits, but it continued beyond the western boundary. It was 0.4m wide and had a maximum recorded depth of 0.2m. The sides were almost vertically cut and broke into a shallow concave base. It truncated the north–south-aligned ditch (above) 1.2m from its southern terminus.

The fill of this drain consisted of subangular and subrounded stones with average dimensions of 0.22m by 0.18m by 0.08m. These stones were poorly sorted and were not regularly placed in the cut. Mixed between the stones was a mid-brown silty clay. The fill contained lumps of red brick and sherds of post-medieval pottery.

Post-excavation analysis is ongoing. The project was funded by Meath County Council.

2001:1031 - SITE 4, RATHMULLAN, MEATH
SMR No.: N/A
Licence No.: 01E0386
Author: Dermot Nelis, IAC Ltd, 8 Dungar Terrace, Dun Laoghaire, Co. Dublin.
Site type: Prehistoric
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

A five-week excavation was carried out on a prehistoric site discovered during topsoil-stripping in advance of the Northern Motorway, Gormanston–Monasterboice, Contract 7. Excavation began on 10 April 2001 and was completed on 15 May 2001.

The site was approximately midway between the Oldbridge and Donore roads and was at the western edge of the motorway way-leave. The area of excavation measured approximately 35m north–south (maximum) by 19m (maximum). Prior to excavation the site consisted of agricultural land.

The earliest evidence for activity within the site boundary consisted of an east–west-aligned curvilinear ditch with an approximate length of 18.9m. From the western terminus it extended eastwards for approximately 8.4m before starting to gradually curve southwards. It had a maximum recorded depth of 0.51m, which was noted at the western end of the ditch, with the average depth being 0.35m. The maximum width of the ditch was 0.8m.

The next phase of activity consisted of a Bronze Age pit that truncated the curvilinear ditch. It measured 1.2m in length, 1.15m in width and 0.86m in depth. The northern side was quite smooth and was nearly vertical. The other sides were also quite steep but were slightly irregular. The sides broke gradually into a shallow concave base, which was under the modern water-table.

The final phase consisted of a series of shallow pits from which no diagnostic material was recovered. All of these pits were located to the south of the curvilinear ditch.

A series of relatively modern features such as field drains represent the last period of physical activity on the site.

Excavation and post-excavation work have revealed that the site most likely dates from the Bronze Age. It is hoped that the ongoing post-excavation process and stratigraphic interpretation of the site will facilitate more detailed interpretation.

This project was funded by Meath County Council.

2001:1032 - SITE 5, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 01E0387
Author: Dermot Nelis, IAC Ltd, 8 Dungar Terrace, Dun Laoghaire, Co. Dublin.
Site type: Prehistoric
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

Site 5, Rathmullan, was identified during monitoring along the route of the Northern Motorway, Gormanston–Monasterboice, Contract 7. The site was approximately midway between the Oldbridge and Donore roads, at the southernmost boundary of Site 4, Rathmullan (see No. 1031 above, 01E0386). Prior to excavation the site consisted of agricultural land.

Site 5 consisted of a shallow subcircular pit (0.68m x 0.48m) with a recorded depth of 0.14m. The north and south sides of the pit were quite steeply sloped, while the east and west sides were more gently sloped. They broke into an uneven, stony base. It was filled with a grey-brown silty, slightly sandy, friable clay that contained some orange mottling. It also contained occasional flecks of charcoal and quite frequent small subangular stone inclusions. A diamond-shaped worked stone was recovered from the fill.

Post-excavation analysis is ongoing. This project was funded by Meath County Council.

2001:1033 - SITE 9, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 01E0390
Author: Dermot Nelis, IAC Ltd, 8 Dungar Terrace, Dun Laoghaire, Co. Dublin.
Site type: Prehistoric
ITM: E 706648m, N 773760m
Lat, Long: 53.702630, -6.384798

A three-week excavation was carried out on Beaker and post-medieval features in advance of the Northern Motorway, Gormanston–Monasterboice, Contract 7.

The site was immediately north of the Donore Road to the south-west of the way-leave of the motorway. The area of excavation measured approximately 19m north–south by 19m (maximum). The site was on flat ground, which sloped off to the east of the excavated area. The areas surrounding the site were stripped of topsoil and were found to be of no archaeological significance. Prior to excavation the site consisted of agricultural land.

Excavation began on 23 April 2001 and was completed by 16 May 2001. All features were excavated down to the natural subsoil. The earliest evidence for activity on the site consisted of a pit in the north of the site. It measured 0.63m south-west/north-east by 0.51m and 0.18m in depth (maximum). It was an isolated feature and cut the natural subsoil. It was suboval in plan with a sharp break of slope; it was

vertical-sided in the south and south-west, and more gradual in the east, west and north-west of the feature. The base was flat with a slightly undulating bottom. It was filled primarily with a thin deposit of a compact mid-grey silty clay, with inclusions of small pebbles and charcoal flecking. The secondary and main fill consisted of a compact mottled blackish-brown silty clay, with occasional pieces of decayed sandstone and mudstone. Finds from this fill included numerous sherds of Beaker pottery, five flint scrapers (two burnt) and a hammer-stone.

A further four pits were excavated to the south-west of the above feature. These did not contain such diagnostic material, but the nature of their fills suggests that they were prehistoric. They could not be stratigraphically linked, and cut the natural subsoil only.

The third phase of activity incorporated the remains of post-medieval/modern drainage and agricultural activity. All features cut the natural subsoil.

Post-excavation analysis is ongoing. The project was funded by Meath County Council.

2001:1034 - SITE 9A, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 01E0433
Author: Dermot Nelis, IAC Ltd, 8 Dungar Terrace, Dun Laoghaire, Co. Dublin.
Site type: Prehistoric
ITM: E 706648m, N 773760m
Lat, Long: 53.702630, -6.384798

A two-month rescue excavation was carried out on a site consisting of possible Neolithic and post-medieval activity in advance of the construction of the Northern Motorway, Contract 7. Twenty-nine negative archaeological features were recorded, including a possible cremation pit containing substantial quantities of Neolithic pottery.

The site was in the townland of Rathmullan, immediately north of the Donore Road, on flat agricultural land approximately 100m east of Site 9 (see No. 1033 above, 01E0390). The area of excavation measured approximately 70m north–south by 25m on average. Excavation began on 14 March 2001. A conservation specialist was required on site for two days to supervise the removal of a nearly complete Neolithic pot, and this has subsequently been excavated in the laboratory. All features were excavated to natural subsoil.

Excavation and post-excavation analysis have revealed that activity on the site dates from the Neolithic period onwards. The earliest activity has been assigned to groups of pits cutting the natural subsoil across the site. A pit which contained a large quantity of Neolithic material is included in this phase.

It is suggested that the next phase of activity on site relates to a north–south ditch which was approximately 67m in length. It varied in width from 0.55m to 1.9m, and was wider to the south of the site. It was also deeper to the south of the site, where it reached 0.8m in depth, while the northern sections of the ditch averaged 0.25m in depth. Seven fills were recorded in this ditch. The final phase of activity on site related to a number of post-medieval ditches orientated roughly east–west, a plough-furrow and a shallow pit.

Post-excavation analysis is ongoing. The project was funded by Meath County Council.

2001:1035 - SITE 10, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 00E0813
Author: Teresa Bolger, 28 Haroldville Avenue, Rialto, Dublin 8.
Site type: Early Bronze Age
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

The site is one of a series of potential prehistoric sites identified during pre-development testing along the route of the Northern Motorway, Contract 7. Excavation of the site began in November 2000 and was completed in March 2001; a short note on the work in progress was submitted to Excavations 2000 (No. 775).

Site 10 was on the brow of a low rise 500–600m south of the Donore Road in the townland of Rathmullan, Co. Meath. The site had clear and unobstructed views north as far as the Donore Road and south as far as the Dublin to Belfast railway line. It could be said to have had a commanding position in the landscape, at least given the generally low-lying nature of the surrounding countryside. It was intervisible with Sites 12, 13, 14, 15/16 and 17 to the south.

The site consisted of a series of small pits and post-holes, with no overall delimiting feature or structure. Indeed, identification of any structures was hampered by the fact that it was transected by a modern field boundary ditch, which cuts through what appears to be the central focus of the site. Three

main phases of early Bronze Age activity have been identified to date. As there was very little clear vertical stratigraphy at the site (there were very few significant intercutting features), the phasing of material is based as much on the nature of the artefacts and the relative composition and situation of the various deposits as upon direct stratigraphic relationships. Fortunately a large proportion of the contexts at the site produced prehistoric pottery types. Provisional identification suggests the presence of Beaker, Food Vessel and Collared or Cordoned Urn pottery. It is hoped that expert analysis of this material will help to further refine the chronology and phasing of activity at the site.

Phase I

The earliest phase of activity was characterised by a series of features and deposits which produced Beaker-type pottery. This activity was concentrated in the south central area of the site. The most significant feature was a series of overlying spreads of occupation material towards the centre of the site. There were three main levels to this occupation material, and all were characterised by the presence of large quantities of Beaker-type pottery, as well as charcoal and flecks of cremated bone.

Towards the base of the primary level was a concentration of small stones packed tightly in a subcircular pattern which may be the remains of a metalled surface. The secondary level of the occupation spread was characterised by a series of very shallow and generally linear cuts into the primary layer. In addition to the range of Beaker-type pottery and struck flint typical of this level, the fill of the easternmost of these shallow cuts also produced a Beaker wrist-bracer. A number of feet from polypod vessels were also recovered from this level of the occupation spread, including one adjacent to the wrist-bracer.

The tertiary level of the occupation spread was characterised by a layer of grey to dark grey clay with frequent charcoal flecks. The occupation spread was truncated on the north by a modern field boundary ditch, and on the south by a post-medieval linear cut. It was also truncated slightly on the east by an alignment of large post-holes relating to Phase II of the site.

This Beaker occupation spread appears to be the earliest surviving feature at the site. Though it seems to have had three separate levels, the consistency of the material suggests a single phase of activity. It is possible that the present differentiation in the deposit is the result of post-depositional processes. Certainly, the shallow cuts which characterise the secondary level seem unlikely to represent deliberate actions. The fills of all the cuts were very similar, and the cuts themselves were only really well defined in section and proved hard to trace and excavate in plan. Their shape and orientation suggest that their present condition may be the result of later agricultural activity (probably ploughing). However, greater analysis of the material is required before such conclusions can be drawn.

To the south and west of the occupation spread was a series of disparate pits, post-holes and stake-holes with no discernible pattern, several of which were sealed by C99, a rough metalled surface relating to Phase II.

To the north-east of the occupation spread was a substantial rounded post-hole which had been partially recut for use as a pit. The surviving dimensions of the post-hole suggest a post 0.5–0.75m in diameter and several metres high. It does not appear to form part of any structure, and so presumably was free-standing. It is difficult to see any practical value for such a post, and this would suggest that it had a symbolic function. This is not to imply that the overall function of the site was ritual, as it is possible for features to fulfil a ritual or symbolic function within a domestic context. It is also clear that the post was deliberately removed and the post-hole allowed to silt up before being recut for use as a pit. This later pit appeared to have been partially lined with charcoal (though there was no evidence for in situ burning) and produced a number of sherds of Beaker-type pottery.

Phase II

The second phase was characterised by a series of features, some of which clearly sealed or truncated Phase I. The other defining characteristic of these features was a tendency to produce a wide variety of early Bronze Age pottery types, including Beaker, Food Vessel and Urn-type pottery. However, the attribution of many of the contexts to this phase of activity is, at present, quite tentative, and it is very probable that as analysis of the material recovered continues, many of the contexts presently assigned to Phase II will be reassessed.

There was an array of small pits and post-holes spread across the south-west and south of the site which appear to relate to this phase of activity, as well as a rough metalled surface to the south-west of the Phase I occupation spread. Arcs of stake-holes were noted in the north-eastern and western edges of the site. Though these may be the remains of an enclosing palisade (or series of palisades), they could not be traced across the south of the site, so this cannot be clearly ascertained.

The two most significant features relating to this phase of activity were an alignment of large posts towards the centre of the site and a possible circular structure in the east of the site.

The alignment of large post-holes ran north-west–south-east, from the southern edge of the modern field boundary ditch (at the point where it turned to the north) down to the northern edge of the post-medieval linear cut. The alignment then arced around to run roughly east–west, with the remainder of the surviving posts being partially truncated by the post-medieval cut. A total of fifteen post-holes were identified in the alignment.

It is unclear at present exactly what kind of structure is represented by the alignment. The best-preserved examples average 0.5m in depth, implying that the original posts stood to over 1m in height, and the size of the few surviving post-pipes would suggest a diameter of between 0.25m and 0.35m. There is certainly a superficial similarity to structure 12 at Chancellorsland, Co. Tipperary (Doody 2000) — a subrectangular building defined by closely spaced large posts. However, the surviving alignment at Site 10 could only represent one or two walls of such a structure, and, even allowing for the level of modern disturbance at the site, the surrounding features do not indicate sufficient truncation to account for the loss of the remainder of such a structure.

It is possible that the remainder of the structure may have been of less substantial construction, and it is also possible that it may not represent the remains of a house at all. The only thing that can be said with any certainty regarding this structure is that it was deliberately removed. The fills of the post-holes, in particular those where a post-pipe survives, do not indicate that the posts were allowed to decay in situ. These fills were characterised by the presence of charcoal flecking, burnt bone fragments, pottery and struck flint — material consistent with deliberate backfilling. In the examples where the post-pipe survives it would appear that the posts were sufficiently loose to be pulled out. In the case of the remaining posts, it is possible that they were so firmly set that they had to be dug out; it is also possible that the packing in these examples collapsed into the post-holes when the post was removed, mixing with and becoming indistinguishable from the backfill material. The other interesting aspect of these post-holes, which also relates to their removal and backfill, is the presence of a variety of pottery types. Some produced clearly Beaker pottery, others Collared or Cordoned Urn, as well as various combinations of Beaker and Urn-type pottery. In terms of conventional Bronze Age chronology this makes little sense, as many of these types are not considered to be contemporary. However, if the backfill material was being drawn from what was readily to hand, it may be that varying layers of debris from different occupation phases were used to backfill the post-holes. As the alignment is situated beside and cuts through part of the Beaker occupation spread, it is certainly possible that the presence of Beaker material is the result of the disturbance of these deposits.

Further post-holes of similar morphology were recorded in the northern side of the modern field boundary ditch and also c. 10m to the west; unfortunately it is not possible to say how or whether these features relate to the main alignment.

The most significant feature identified was situated in the east of the site. It was primarily composed of three curving trenches on a roughly circular alignment (C136, C109/C57 and C292), one of which (C292) contained evidence for a series of stake-holes. When these were viewed in conjunction with the small pits or possible post-holes in the same area, the outline of a potential circular structure emerged. Only the easternmost slot-trench, C292, displays any clear indication of the nature of the structure, with the presence of a series of small stake-holes suggesting a structure with a light stake construction, though there is no clear evidence for internal roof supports.

Again it would appear that the structure was deliberately dismantled. There was no evidence for internal stakes or posts within either C136 or C109/C57, and, like the post-holes in grid square 11, they appear to have been deliberately backfilled. It is possible that whatever superstructure was supported by these two trenches was actually dug out, whereas the superstructure supported by C292 was pulled out, preserving the position of many of the stakes. C109/C57 at least was allowed to stand open for a time and had begun to silt up naturally before being deliberately backfilled. Also it is unclear which, if any, of the gaps between the three trenches represents the entrance to the structure. Certainly, the gap between C292 and C109/C57 is the larger of the two and is probably the best candidate for the entrance. It is also most directly opposite the section of the ground-plan formed by small discrete pits or post-holes, which would provide a parallel to the Bronze Age structure excavated at Site 15/16 to the south (Emmett Stafford, pers. comm.). However, it is worth noting that this structure was much better defined, with a far greater proportion of its ground-plan defined by slot-trenches, and there was only one obvious gap for the entrance. It is possible that the structure at Site 10 did not encompass a complete circle and also that it had more than one entrance gap. Hopefully further analysis of the site and examination of potential parallels at other sites will clarify this issue.

Phase III

The third phase was characterised by a series of features which tended to produce Urn-type pottery. The best evidence for this phase of activity was concentrated in the south of the site, with one isolated feature in the north-eastern area. The most substantial features relating to this phase were a series of

large pits in the south-west of the site. To date, both Collared and Cordoned Urn have been provisionally identified amongst the pottery recovered from the various fills, and several large feet from polypod vessels were also recovered.

To the east of these pits, several smaller pits or post-holes had been cut into C99, the Phase II metalled surface. In the north-east of the site was a medium-sized pit (C209) which had been partially truncated by a modern field drain. Towards the southern edge of C209 a later possible post-hole was identified. It was subrounded with steeply sloping sides and a rounded base, and was filled with a dark-greyish black charcoal-rich silty clay which produced two sherds of early Bronze Age pottery and a single piece of worked flint.

Discussion

The results of the excavation indicate that it was a multi-phase early Bronze Age site. To date, three main phases of Bronze Age activity have been identified, and preliminary analysis of the material suggests that activity at the site ranged over a considerable period of the earlier Bronze Age.

The best dating evidence at present comes from the pottery remains, which appear to indicate an early Bronze Age date, ranging between the late third and early second millennia BC. However, taking into account the furthest extremes of the most recent date ranges suggested for the various pottery forms would suggest a period of use for Site 10 stretching over almost a millennium (Brindley and Lanting 1995), and this does seem slightly unrealistic. The amount of surviving material does not justify such an interpretation at this stage in the analysis. Neither does the nature of the deposits at the site suggest that periods of abandonment separated the phases of occupation. The nature of the surviving material is strongly suggestive of continuous occupation or usage. However, given the range of material recovered from the site and in the absence of radiocarbon dates, the estimated period of usage of the site cannot at present be reduced to any less than several centuries.

While the interpretation of Site 10 still poses many problems, at present the evidence would appear to favour a domestic interpretation. There is no evidence for funerary activity at the site, and it is difficult at this stage in the analysis of the material to arrive at sufficient evidence to indicate ritual activity. Certainly the quantity and variety of pottery finds and the presence of a number of rare finds, such as the remains of polypod vessels and the Beaker wrist-bracer, would indicate a rich or possibly high-status site. Unfortunately the evidence for structures at the site is particularly poor. However, as is clear from the finds recovered, the site was in use for a considerable period of the earlier Bronze Age, and since at least three clear phases of occupation have been identified to date, it is possible that the continuous use of the site may have served to obscure some of the structural evidence.

A curious fact at the site is the complete lack of evidence for any hearths, or any other indications of in situ burning, despite the presence of large quantities of charcoal and burnt material in the various deposits.

Less than 100m to the south of Site 10 was a Beaker habitation site (Site 12, see No. 1036 below), which also produced a rich array of Beaker material, including the remains of a number of polypod vessels. It is quite probable that this site and the Phase I activity at Site 10 were broadly contemporary, and given their proximity it is possible that they may represent neighbouring domestic sites. As analysis of the material from both sites progresses, it will hopefully be possible to discuss any possible relationship between the two sites in more detail.

References

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Doody, M. 2000 Bronze Age houses. In A. Desmond, G. Johnson et al. (eds), New agendas in Irish prehistory, 135–60. Bray.

2001:1036 - SITE 12, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 01E0294
Author: Teresa Bolger, 28 Haroldville Avenue, Rialto, Dublin 8.
Site type: Beaker habitation
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

The site is one of a series of potential prehistoric sites identified during pre-development testing along the route of the proposed Northern Motorway, Contract 7. Site 12 was on a low rise 550–650m south of the Donore Road in the townland of Rathmullan, Co. Meath, and covered an area of approximately 15m by 10m. The site was on a gentle south-facing slope and had clear and unobstructed views south

as far as the Dublin to Belfast railway line. It was clearly intervisible with sites 10, 13, 14, 15–16 and 17. Three main phases of early Bronze Age activity have been identified at the site to date.

Phase I

The earliest activity was represented by a single pit, C23, in the centre of the site. C23 was subangular in shape, measuring 2m by 1.4m with an original depth of 0.86m. It was heavily truncated by later phases of activity and was filled with a series of slightly waterlogged deposits. A substantial quantity of unburnt bone, some antler and one fragment of shell were recovered from the fills of this pit. Cursory examination of the bone indicated damage consistent with butchery, but this determination needs to be confirmed by specialist analysis of the material. The amount of unburnt bone and the charcoal inclusions suggest that the fills were refuse layers.

Phase II

The second phase of occupation was distinguished by two very large pits, C14 and C17, in the centre and southern margins of the site respectively. The larger of the two, C14, was subrounded in shape and measured 3.55m by 3.5m, with a depth of 0.6m. It heavily truncated the earlier Phase I pit. Its lower fills also produced unburnt bone and shell and were quite similar in composition to the fills of C23. The fill C12 was made up of a dark brownish-grey silty clay, with frequent charcoal lumps and flecks. A large quantity of early Bronze Age pottery (529 sherds) was recovered, most of which appears to be of Beaker type, though this has still to be confirmed by a specialist. The assemblage included 34 decorated sherds, 30 rim sherds, nine base sherds, one possible handle and five feet of polypod vessels. A quantity of worked flint was also recovered (31 pieces in total), including one blade, three scrapers and one unfinished arrowhead. The pit was partially sealed by a metalled surface relating to Phase III.

Though polypod vessels are a recognised part of the Beaker assemblage and are associated with the Wessex/Middle Rhine group of Beaker wares, they are still considered to be a very rare occurrence on Beaker sites. It should be noted, however, that the best-known example of this type of vessel in Ireland comes from the excavations at Newgrange. The most unusual find from the site, though, is what would appear to be the handle of a pottery vessel, recovered from the upper fill of C14. Handled Beaker vessels are well documented from British contexts but are not normally associated with the Beaker assemblage in Ireland. Further comment must await specialist analysis of this item.

The second pit, C17, was oval and measured 2.4m by 1.6m, with a depth of 0.39m. Its fills were characterised by burnt material (mainly charcoal and burnt bone). Again a significant quantity of early Bronze Age pottery was recovered (c. 80 sherds), most of which appears to be of Beaker type, though this has still to be confirmed by a specialist. This assemblage also included another foot from a polypod vessel, giving a total of six examples from this site. The pit was sealed by a metalled surface relating to Phase III, which had partially slumped into it.

In the north-east corner of the site a pair of shallow slot-trenches aligned north-west to south-east were identified. However, any clear evidence of an associated structure was lost owing to the heavy truncation around the site boundary caused by machine activity prior to excavation. As a result of this truncation it was not possible to ascertain the full extent of either trench.

Phase III

Phase III was the final phase of activity at the site. It was mainly defined by the rough metalled surface, C20, which measured 11m by 7m and sealed both of the Phase II pits. However, the eastern and southern edges of the surface had been heavily truncated by machinery prior to any excavation on site, so that its original extent could not be determined.

Contemporary with the metalled surface was a medium-sized stone-filled pit, C16. It was suboval in shape, measuring 0.85m by 0.45m, with a depth of 0.37m. It truncated both the large Phase II pit, C14, and the earlier Phase I pit, C23. The fill of the pit was very stony and produced a small quantity of Beaker-type pottery.

A second small pit (C5) in the north-east corner of the site slightly truncated the terminal of the western slot-trench. This pit measured 1.03m by 0.79m with a depth of 0.21m, and again had a very stony fill, with a high proportion of burnt stone. Patches of pinkish-brown burnt clay along the edges of the cut could suggest some in situ burning. Despite the large quantities of charcoal from the fills of the various features at the site, this is the only indication of in situ burning found.

Discussion

Though Site 12 was small, the material it produced was extremely rich. The overall impression is one of domestic activity, with the various pit fills probably being the result of the clearance of accumulated habitation debris. Any clear evidence of an associated structure, as indicated by the pair of aligned slot-

trenches C8 and C10, was, however, lost owing to the heavy truncation around the site by machinery prior to excavation.

The pottery evidence indicates a late Neolithic to early Bronze Age date for the site. The rare finds of the remains of polypod vessels and a handled vessel, as well as the sheer quantity of pottery from the site, may suggest rich/high-status occupation.

It is also worth noting that a high-quality and rich Beaker assemblage was also present at Site 10, less than 100m to the north. Though there were two later phases of occupation at Site 10, it is possible that the Beaker material from Phase I at this site may indicate broad contemporaneity with the neighbouring Site 12. However, detailed specialist analysis of the material from both sites is needed to confirm this. One final feature that links both Sites 10 and 12, as well as Site 13 to the south, is (with the possible exception of C5) the absence of any evidence for a hearth or any in situ burning at any of the sites despite the frequent presence of burnt and charcoal-rich deposits.

2001:1037 - SITE 13, RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 01E0295
Author: Teresa Bolger, 28 Haroldville Avenue, Rialto, Dublin 8.
Site type: Late Neolithic
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

The site is one of a series of potential prehistoric sites identified during pre-development testing along the route of the proposed Northern Motorway, Contract 7. Site 13 was on a gentle south-facing slope approximately 250m north of the Dublin to Belfast railway line; it was less than 100m from Sites 15/16 to the south and less than 50m from Site 12 to the north. The area of excavation measured approximately 60m north–south (maximum) by 30m (maximum). Most of the archaeological material identified at the site was located in the northern half of the excavation area, with the southern half of the site characterised by post-medieval drainage and cultivation features.

The most significant feature was a large rounded pit, C27, which measured 1.64m by 1.6m with a depth of 0.58m. It had very steep sides which sloped down to a flat bottom, and there appeared to have been five periods of usage. The primary fill (C61) contained occasional charcoal flecks and patches of burnt clay towards the edges, as well as a large amount of burnt bone and a moderate amount of flint, including six burnt pieces. It was sealed by the secondary fill, which was also rich in charcoal and again had a high percentage of burnt bone. This context produced a much greater quantity of struck flint (c. 86 pieces), about a third of which appear to have been burnt. A small amount of possible late Neolithic pottery was also recovered.

The tertiary fill, C29, probably represents the most important period of activity. Again it was a charcoal-rich deposit with a large quantity of worked flint, approximately half of which showed indications of burning. Two possible struck stones and one possible rubbing stone from a saddle quern were also identified. Alongside the struck stone there was a large quantity of cremated bone. C29 produced a small number of sherds of late Neolithic pottery, including two decorated rim sherds. The most important find, however, was an intact pottery vessel towards the southern edge of the pit (approximately halfway down the pit). The vessel appears to have been a circular, flat-bottomed bowl, with an original diameter of c. 0.2m. Its sides were c. 0.15m high. The bowl had been inserted into the pit on its side, with its base pushed firmly against the side of the pit. As it had suffered a number of stress fractures owing to the pressure of the soil acting on it, it cannot, at present, be categorically stated that it was undamaged at the time of deposition. However, its general condition at the time of discovery does suggest that this is a strong possibility. There were no indications that the vessel had contained or otherwise protected any material at the time of deposition. The decoration on the bowl was quite simple, with an incised line round the inside of the vessel about 5mm below the rim and a short raised rib on the exterior. The fabric of the bowl was very similar to that of many sherds of pottery recovered elsewhere within the pit. The form and decoration of the vessel show a strong affinity with Grooved Ware pottery, but this has yet to be confirmed by specialist analysis.

The fourth fill again produced a large quantity of struck flint, a high proportion of which appeared to have been burnt. A quantity of late Neolithic pottery was also recovered (c. 24 sherds), including the possible fragmentary remains of a further bowl. The fabric and decoration of this possible bowl were strikingly similar to that of the intact example from C29. The final fill was charcoal-rich with frequent patches of burnt clay. A small amount of burnt bone and a moderate amount of flint were recovered from this context, as well as one piece of struck quartz and further sherds of late Neolithic pottery.

The remaining activity at the site was represented by a disparate series of post-holes, stake-holes and pits located generally to the north of pit C27. Many of the features identified appear to have been heavily truncated prior to any excavation. Though the site had been used to pasture animals before its

acquisition for development, the depth of topsoil (c. 0.5m) suggests that it had been ploughed at some point. Repeated ploughing of the field over time could have resulted in the kind of truncation noted at the site. As a result, no structures could be identified from the arrangement of the post-holes and stake-holes. It is possible that some of them may be associated with C27 in some way, but this cannot be ascertained at this time.

Aside from the collection of post-holes and stake-holes identified across the site, a quantity of struck flint and flint cores was recovered from the surface of the natural geology of the site as it was trowelled back. This scatter of flint was mainly concentrated in the north of the site, and roughly corresponded with the spread of the post-holes across the site. Though it is possible that the present distribution of the flint scatter could be the result of natural formation processes, it could also represent evidence for flint-working. It is also possible that the spread of post-holes may relate in some way to this activity.

Though the archaeological remains recorded at Site 13 were not particularly complex, they were quite enigmatic. The exact function of the site remains elusive, though the material from C27 could suggest a funerary or ritual function. Certainly, the provisional identification of the finds from this pit suggests a late Neolithic date for the site. However, as work on the material recovered from the site is ongoing, this has yet to be confirmed.

The two nearest sites to the north (Sites 12 and 10, see Nos 1035 and 1036 above) appear to date from the early Bronze Age, so it is unlikely that they represent contemporary activity. However, Site 15/16 to the south produced a range of material dating from the Neolithic to the Bronze Age, so it is possible that one or more phases of activity at this site may be broadly contemporary with the activity at Site 13. Of particular significance in this regard is the identification of a possible timber circle similar to those associated with Grooved Ware pottery at Knowth and Newgrange (Emmet Stafford, pers. comm.).

2002:1425 - BALGEEN AND RATHMULLAN, MEATH

SMR No.: N/A

Licence No.: 02E0745

Author: Ian Russell, ACS Ltd, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.

Site type: Monitoring

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

Monitoring was conducted during topsoil-stripping at the Donore Road in the townland of Rathmullan and at Balgeen, Co. Meath, during groundworks associated with the construction of the proposed toll plaza on the new M1 motorway.

The sod and topsoil were an average of 0.4m thick and directly overlay the natural, orange, sandy clay. At the Donore Road, stockpiles of topsoil from stripping in 2001 had to be removed before stripping could begin on the proposed toll booth sites.

Four sites were exposed during monitoring, two at the Donore Road. Rathmullan 10 was revealed on the western side of the proposed motorway and consisted of a single ditch. It was excavated by Ian Russell (No. 1512 below, 02E0870). Rathmullan 11 was exposed on the eastern side of the motorway and consisted of two pits. This site was excavated by Ian Russell (No. 1513 below, 02E1245).

The other two sites were in the townland of Balgeen, close to the River Nanny. A possible settlement site was revealed at Balgeen 4 Ext., which was excavated by Robert O'Hara under a transfer and extension of licence 01E0742, issued to Helen Kehoe in 2001 (No. 1423 above). Balgeen 5 was exposed a short distance to the north; it contained one ditch, three pits and an area of redeposited clay and was excavated by Robert O'Hara under licence 02E0943 (No. 1424 above).

2002:1508 - RATHMULLAN, MEATH

SMR No.: N/A

Licence No.: 02E0183

Author: Finola O'Carroll, Cultural Resource Development Services Ltd, Unit 4, Dundrum Business Park, Dundrum, Dublin 14.

Site type: Multi-period

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

An assessment of a Proposed Development site south-west of Drogheda was undertaken in June and July 2002. The site was bounded on the south by the Drogheda–Donore road and on the west by the M1 motorway. It was considered to have archaeological potential because it is 500m east of a ringfort (SMR 20:21), which gives the townland its name, and overlooks the River Boyne to the north, Drogheda to the north-east and the high ground of Tullyesker, Red Mountain and Coolfore farther north.

Most importantly, a number of significant sites had been found during the construction of the M1 motorway. The area investigated encompassed thirteen fields, a total area of 25.5ha, on a terrace overlooking the River Boyne. Generally there was a gradual north to south slope but with distinct undulations throughout the area. The ground also fell gradually from west to east. To the north of Fields 1, 4 and 5 (the north-west side of the site) there was an extended area of more level ground before a pronounced fall north toward the River Boyne. The northern boundaries of Fields 6 and 7 (north-east side) were close to this pronounced break of slope.

The quality of ground and drainage differed greatly from the low-lying fields to the higher areas, with the low-lying areas tending to be quite water saturated. Although monitoring of these fields revealed a complex series of drainage patterns, they proved inefficient during heavy rainfall. Agricultural activity occurred in these fields, and many deep plough ruts remained. The higher ground, Fields 1, 2, 5, and 8, remained quite dry. Most of the archaeology was noted in these higher plains and on the south–north slope to the River Boyne.

Before test excavation, geophysical prospection of the entire site (licence 02R026) had taken place and had indicated a number of areas of interest. Test excavation was carried out by a mechanical digger fitted with a 2m toothless ditching bucket. Approximately 9km of test-trenches, or roughly 10% of the total site area, was examined.

A total of 68 possible archaeological features were identified throughout the development area. Eight archaeological zones, comprising 22 features or complexes of features, were uncovered. There was a high density of archaeology in Fields 1, 4–8 and 11. A further six isolated features were uncovered in Fields 9, 10 and 12.

In Fields 5 and 6, particularly, the extent of the complexes indicated by the features uncovered in the testing can be estimated from the signals recorded in the geophysical survey and suggest quite extensive archaeological deposits. The complex of features in Field 4 is also significant. A preliminary assessment of all of these features indicates that they are prehistoric in date; struck flint has been recovered from some, as well as bone, both burnt and unburnt in two cases. Most of the features consist of spreads of burnt material, and these generally correlate well with the geophysical signal, which, being so clear, was initially interpreted as possible modern debris. During the testing, post-medieval to modern pottery was recovered but in small quantities; however, only three sherds of medieval pottery were identified. All identified features were covered in plastic, and the trenches were backfilled.

In addition to testing, monitoring of all topsoil-stripping for Phase 1 of the roads was carried out, and 27 features were uncovered. One of these, a small charcoal-filled pit in isolation from the rest, was sectioned and recorded. Four features uncovered in the area of the site compound were recorded and sampled, and the compound was then trunked.

2002:1509 - RATHMULLAN, MEATH

SMR No.: N/A

Licence No.: 02E1265

Author: Finola O'Carroll, Cultural Resource Development Services Ltd, Unit 4, Dundrum Business Park, Dundrum, Dublin 14.

Site type: Multi-period

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

Excavations were carried out at the IDA Business Park, Rathmullan, after testing of the site (25.5ha in extent) and monitoring of the topsoil-stripping for the site compound and Phase 1 of the roads (see No. 1508 above, 02E0183). Three of the areas excavated (A, B, D) were within the road-take, and the fourth, Area C, was to the east of the road.

Rathmullan is at the eastern end of the Boyne Valley and overlooks Drogheda to the east, the high ground of Tullyesker, Red Mountain and Coolfore to the north, and Drybridge, the location of the new bridge over the Boyne, to the north-west. It is bounded on the south by the Drogheda–Donore Road and on the west by the M1 motorway. Significant archaeological sites were uncovered on both sides of the Boyne during the construction of the M1 motorway; six of these were in the immediate vicinity of the business park. They ranged in date from the Neolithic (c. 4000 BC) to the early historic period (AD 900).

Area A

Area A was on a natural rise in the landscape that sloped gradually to both north and south. It measured 24m north–south by 20m. Fourteen features were noted during the topsoil-stripping for the road, one of which later proved to be non-archaeological. These comprised pits, post-holes, stake-holes and burnt spreads. Two of the pits had heavily burnt material in their fill. One pit had four stake-holes at its base and was dug into a second burnt pit, which was alongside a backfilled watercourse.

No diagnostic material was recovered, but samples have been taken for radiocarbon dating. Burnt material, including animal bone, teeth, burnt stone and wood, was evident at the base of the adjacent gully. This material was well preserved owing to the waterlogged conditions. The watercourse itself was a natural feature; it was very deep (over 1.8m) and filled very rapidly with water. It did not require full excavation and has been preserved in situ. Another pit with burnt fill was situated c. 3m north-west of this feature and contained a similar fill of burnt stone and charcoal.

Two post-holes near to one another were excavated. They contained similar grey clay deposits with flecks of charcoal. Unfortunately no diagnostic finds were found in either of these features, so analysis of their fills will need to be carried out. A pit with a grey clay fill produced animal teeth, charcoal, one flint scraper and one flint flake. Only one hearth feature and one burnt spread were recorded in this area. Overall, the finds and features suggest a Bronze Age date for the site.

Area B

Area B, 10m north of Area A, measured 115m north–south by 20m; it sloped gently from south to north and then more steeply at its northern end. It was noted during excavation that the northern end was particularly water saturated and that it had possibly undergone some form of land reclamation.

Initially twenty features were identified in this area. Twelve were considered to be archaeological, comprising pits, a post-hole and a hearth. The other eight consisted of glacial features, drainage systems and field boundaries.

Two of the pits contained Bronze Age pottery, one with most of a pot, as well as a quartz pebble, burnt bone and flint artefacts. Although the burnt bone noted in these features was not of a high concentration, its association with Middle and Early Bronze Age pottery sherds suggests token burial deposits. However, this bone has yet to be positively identified as human. Also contained within these features were flint artefacts, including a thumbnail scraper, a flint blade, waste flakes and a possible stone axe, which was severely damaged at the blade end. The pottery, flint implements, burnt bone and charcoal samples await specialist analysis. The location of these pits at the western edge of the area suggests that more features may remain outside the road-take.

The remaining seven pits noted in this area were similar to each other, with relatively inorganic fills. In some cases these contained flint tools, e.g. a thumbnail scraper, a flint core and a possible worked chert. Small quantities of burnt bone and charcoal were included in these deposits. One post-hole and one possible hearth were also uncovered.

At the northern end of the area, in the lower-lying ground, a deep pit was excavated. This appeared to have functioned as a well or sump into which a shallow gully channelled water. When emptied of the fills, which had blocked it completely, it filled with water quite rapidly. Initial inspection showed that some of the fills contained snail shells, indicating that the feature had silted up and was not entirely backfilled as one operation. Wood taken from it had been worked and will be dated in due course. One piece has been identified tentatively as a medieval barrel spigot.

The other features investigated in Area B included modern drainage systems, field boundaries, furrows and natural glacial formations. The furrows indicate that the area was intensively farmed, resulting in the truncation of all of the features.

The diagnostic material in Area B appeared to suggest Bronze Age activity incorporating ritual and burial practices. Some of the undiagnostic features may relate to domestic activity that is not necessarily of Bronze Age date. As all of the features had been truncated by later ploughing, it was not possible to relate them stratigraphically.

2002:1510 - RATHMULLAN, MEATH

SMR No.: N/A

Licence No.: 02E1267

Author: Finola O'Carroll, Cultural Resource Development Services Ltd, Unit 4, Dundrum Business Park, Dundrum, Dublin 14.

Site type: Multi-period

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

Excavations were carried out at the IDA Business Park, Rathmullan, after testing of the site (25.5ha in extent) and monitoring of the topsoil-stripping for the site compound and Phase 1 of the roads (No. 1508 above, 02E0183). Excavations were carried out in four separate areas; Areas A and B were dealt with under licence 02E1265 (No. 1509 above). Area C, in the east of the site, was excavated to allow ESB and security ducting to be inserted.

Area C area measured 35m east–west by 25m. The terrain was generally level, with a slight fall to the east. In contrast to Areas A and B, in which the features were generally dispersed, Area C consisted of a complex of post-holes, stake-holes, pits, burnt spreads and a possible trough, all in reasonably

close proximity, and modern furrows. Unfortunately, owing to intensive later farming on this site, it was very difficult to determine the relationship between the features, as they had been badly truncated. A total of 69 features were recorded; two were non-archaeological, and 39 were post-holes. A large proportion of the post-holes formed a possible double-walled semicircular structure at the north-east of the site. The remaining post-holes were widely dispersed throughout the site, and further analysis of their fills will determine the relationships, if any, between them.

The possible trough, with a series of post-holes on its perimeter, was situated roughly in the centre of the site. It was thought initially that the post-holes may have marked a windbreak for a hearth within the trough. However, the fill was a uniform, charcoal-rich deposit, suggesting a single dump of material. Seven stake-holes were recorded near the post-holes and therefore formed part of the structure.

Ten burnt spreads were noted. They were very irregular in shape and spanned the southern half of the site. This burnt material was also recorded as the latest fill of many of the post-holes. The presence of furrows truncating these spreads also explains why the burnt spread was widely and irregularly distributed throughout the site.

Three pits containing burnt stone and charcoal were uncovered. However, during excavation it was evident that none of these deposits was burnt in situ. This suggests that these pits in this area had been dug specifically for the purpose of dumping material that had been burnt elsewhere. One fragment of worked flint was found in the burnt deposits.

Another pit type consisted of irregularly shaped features containing grey silty clay deposits.

As a result of truncation by later farming activities, the archaeology uncovered was cut directly into subsoil, with all intermediate layers of activity having been destroyed. Without the survival of these layers, recreating a sequence of events for the area may prove difficult. Dating evidence, find analysis and background research are necessary to understand this site fully.

2002:1511 - RATHMULLAN, MEATH

SMR No.: N/A

Licence No.: 02E1269

Author: Finola O'Carroll, Cultural Resource Development Services Ltd, Unit 4, Dundrum Business Park, Dundrum, Dublin 14.

Site type: Vernacular buildings

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

Excavations were carried out at the IDA Business Park, Rathmullan, after testing of the site (25.5ha in extent) and monitoring of the topsoil-stripping for the site compound and Phase 1 of the roads (No. 1508 above, 02E0183). Excavations were carried out in four separate areas; Areas A and B were dealt with under licence 02E1265 (No. 1509 above). Area C was excavated under licence 02E1267 (No. 1510 above).

Area D was within the road-take at the site entrance. This area is recorded on the 1836 6-inch OS map as two rectangular houses oriented north–south and a third facing onto the road. A revision of 1882 shows how these earlier buildings were demolished and another building was subsequently constructed. By 1909 all buildings were demolished. Pottery recovered from the testing of this site will be analysed to confirm this sequence. It appeared that during the initial building phase the whole area had been scarped down to natural and different areas were raised by rough cobbling to level the area.

All surviving elements of the vernacular buildings (thresholds, cobbled surfaces, drains) and wall foundations were recorded. All features were sectioned, and it was determined that no earlier archaeological features existed beneath them. Historical research may shed light on whether these were originally part of a larger estate or a small farmyard. The scaling down of the buildings in the post-Famine period may be attributable to the depopulation and impoverishment of the area owing to that catastrophe.

2002:1512 - RATHMULLAN 10, MEATH

SMR No.: N/A

Licence No.: 02E0870

Author: Ian Russell, ACS Ltd, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.

Site type: Ditch

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

A single north–south-running ditch and three 19th–20th-century field drains were exposed during monitoring of topsoil-stripping associated with the proposed toll plaza at Rathmullan, Co. Meath (No. 1425 above, 02E0745).

The ditch, exposed at a height of 60.294m OD, was 27m long and 1.4m wide and extended to a depth of 0.21m; it had been filled with a compact, grey, dauby clay. A rimsherd of a late medieval vessel and a large fragment of a possible late medieval floor tile were recovered from the fill during monitoring.

The ditch had been cut by three field drains. A number of finds recovered from the fill of two of the drains indicated that they dated to the 19th–20th centuries.

2002:1513 - RATHMULLAN 11, MEATH

SMR No.: N/A
Licence No.: 02E1245
Author: Ian Russell, ACS Ltd, Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth.
Site type: Pits
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

Two oval pits were exposed during the monitoring of topsoil-stripping associated with the construction of the northern ramp of the proposed toll plaza at Rathmullan, Co. Meath.

Both pits had been filled with a black/dark grey loam containing frequent inclusions of angular and heat-shattered stone and are likely to represent outlying pits from a potential fulacht fiadh that lay outside the site to the north or south. Pit F004 had been cut by a post-medieval/modern field drain, oriented north-east/south-west. No finds were recovered during the excavation, although a single piece of animal bone was recovered from the base of F004.

2003:1450 - RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 03E0916
Author: Finola O'Carroll, Cultural Resource Development Services Ltd, Unit 4, Dundrum Business Park, Dundrum, Dublin 14.
Site type: Gullies
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

The site is situated in Rathmullan Business Park, Co. Meath, in an area of high archaeological potential, as the existence of a ringfort (SMR 20:21) and the discovery of several sites in its vicinity during testing of the M1 motorway shows. The excavation was undertaken as a result of the proposed relocation of an ESB pylon. This site had already been identified during intensive testing of the area (Excavations 2002, No. 1510, 02E0183), undertaken prior to the proposed construction of an IDA business park. During the testing phase, 63 acres of farmland were examined and many archaeological sites dating from the prehistoric to the modern era were uncovered. The site under discussion was uncovered in Field 1.

The initial testing in the area of the proposed pylon site had been carried out in Test-trench 1.8. Two features were uncovered and the trench was subsequently backfilled for later evaluation. Prior to the start of the excavation, the footprint of the pylon was surveyed and a 2m buffer on the perimeter of this grid was added to allow for possible disturbance during the construction of the pylon. The final dimensions of the cutting were 11m in width by 11m in length by 0.45m in depth. This was stripped of topsoil by a 2m-wide ditching bucket. Archaeological features uncovered during the testing phase were reopened and excavated fully.

Two gullies were uncovered in this area. They ran parallel to each other, orientated roughly north-south, and merged at the northern extent of the site. Upon merging, both features appeared as a single ditch containing a mixed deposit. The point at which they merged was not apparent on excavation, therefore no stratigraphic relationship between both features could be obtained. No diagnostic finds were uncovered from their deposits, though charred grain was recovered from one, so dating of this feature is dependent on radiocarbon results, not yet obtained. The results of the soil sample analysis may shed more light on both the function and dates of these features.

2003:1451 - RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 03E1288
Author: Finola O'Carroll, Cultural Resource Development Services Ltd, Unit 4, Dundrum Business Park, Dundrum, Dublin 14.
Site type: No archaeological significance
ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

Pre-development testing was carried out for a proposed hotel site at Rathmullan, Drogheda, Co. Meath, in advance of an application for planning permission. Testing using a mechanical digger fitted with a 1.5m ditching bucket was carried out over a period of two and a half days. Eleven trenches, each 12m apart, were excavated, representing a little over 10% of the area to be developed. A number of furrows, drains and old field boundaries were uncovered. All were of post-medieval date and none were deemed to be of archaeological interest.

2004:1089 - RATHMULLAN ROAD, DROGHEDA, LOUTH

SMR No.: N/A

Licence No.: 04E0507 and ext.

Author: David Bayley, Irish Archaeological Consultancy Ltd, 8 Dungar Terrace, Dœn Laoghaire, Co. Dublin.

Site type: Enclosure?

ITM: E 706428m, N 775018m

Lat, Long: 53.713973, -6.387696

Initial pre-development testing was undertaken at Rathmullan, Drogheda, Co. Louth, on 27 April 2004, using an eighteen-tonne tracked machine equipped with a toothless grading bucket. Twenty-seven trenches were excavated across the development area, many of which were specifically placed to target potential archaeological features that were identified during a geophysical testing programme that was undertaken prior to testing.

The geophysical testing results indicated a possible enclosure in the north-west of the Proposed Development area, but this area was not tested during the initial testing programme. When nothing of archaeological significance was identified in the first phase of testing, it was decided to hand-excavate two test-trenches across the possible enclosure. This was carried out between 27 May and 1 June 2004. One trench was excavated across the western part of the possible enclosure, while the other was excavated across the eastern part. It was later decided to join the two hand-excavated trenches using a five-tonne mini-digger equipped with a flat, toothless bucket. The mini-digger was also used to open two small areas around two potential internal features that were identified during the geophysical survey.

A ditch feature was recorded in the western trench. It measured 2.92m in width and was 0.84m deep. It was oriented north-south and its location tied in with the possible enclosure identified during the geophysical survey. No datable material was recovered from the fill, but a quantity of disarticulated animal bone was recovered.

On excavation of the trench over the eastern part of the potential enclosure, no archaeological features were immediately apparent. The trench was left open for a period of four days and was repeatedly trowelled during this period, but nothing of an archaeological nature was identified. No archaeological features were identified in the mechanically excavated trench across the interior of the enclosure.

2004:1323 - RATHMULLAN, MEATH

SMR No.: N/A

Licence No.: 04E1212

Author: Melanie McQuade, Margaret Gowen & Co. Ltd, 27 Merrion Square, Dublin 2.

Site type: Fulacht fiadh

ITM: E 706405m, N 774461m

Lat, Long: 53.708975, -6.388235

Monitoring was carried out on a development site located to the west of Drogheda in the townland of Rathmullan, Co. Meath, between 23 August and 30 September 2004. The site covered an area of c. 285m by 270m. A 19th-century field boundary and post-medieval drains were uncovered. Three pieces of worked flint were recovered from ploughsoil and the ploughed-out remains of a fulacht fiadh were uncovered towards the base of a low north-facing slope on the south of the site. The fulacht fiadh was excavated and three phases of activity were identified.

During the first phase a trough was excavated. This was a subrectangular pit (2.04m long and 0.8-1.02m wide) aligned roughly north-south. In the north-east of the trough were three stake-holes. These had diameters of 50-70mm and were 60-130mm long. No corresponding stake-holes were identified on the west of the trough. Their function is not clear. It is possible that they may have been part of a wooden structure or lining of the trough.

Phase 2 saw the use of the trough for heating water and the accumulation of a mound of burnt material. No evidence was uncovered for a hearth, but the mound comprised a deposit of charcoal-stained clay with much burnt stone (3.3m by 2.6m). It was a maximum of 50mm deep and lay directly

on top of natural subsoil. The mound material was flanked to the north-east and north-west by spreads of light-grey silty clay with burnt stone.

In the third phase of activity a drain was cut through the mound.

No finds were recovered from the excavation. The results of specialist studies and radiocarbon analysis of the archaeological material are awaited.

2005:1235 - RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 05E0352
Author: Shane Delaney, Irish Archaeological Consultancy Ltd, 8 Dungar Terrace, Dún Laoghaire, Co. Dublin.
Site type: Probable prehistoric settlement
ITM: E 706528m, N 773718m
Lat, Long: 53.702277, -6.386629

Excavation was required of features identified during an intensive testing programme carried out by Finola O'Carroll (Excavations 2002, No. 1508, 02E0183). Three areas of potential were identified on the basis of suspected pits and possible archaeological features. A fourth area was identified on the basis of an anomaly identified during a geophysical scan of the area.

Four additional test-trenches were excavated to the south of Field 6. Nothing of archaeological significance was recorded at this location. An additional trench was opened parallel with the southern edge of the northern hedge line in Field 9. Nothing of archaeological significance was recorded from here.

Area A, an area 20m by 22m north–south, was opened over anomalies in Field 6, revealing a number of shallow pits, some containing charcoal and evidence for burning. A possible hut site measuring 2m by 2.5m was identified. This consisted of a shallow pit and appeared to be flagged with irregular but flat stones. The stones were funnelled to the east and may have formed an entrance passage. A hearth was identified c. 0.3cm to the west.

No diagnostic finds were recovered from any of the features, but a number of struck flint items were retrieved from the topsoil. It is suspected that the possible hut site and hearth may be contemporary with the ephemeral remains of the pits and hearths and may represent the remains of a temporary encampment.

Area B, an area 16m by 13m (south-east/north-west), was opened over the anomaly identified in the geophysical scan. A modern stone-filled drain was recorded to the east of the area. Nothing of archaeological significance was recorded from the area.

Area C, an area 16.5m by 17.5m, was opened over a possible pit feature identified during testing. This was the only feature identified in the area. The pit was irregular and, although it contained charcoal, was not deemed to be of archaeological significance.

Area D, an area 28m by 18m, was opened over an anomaly identified during the testing programme. It was identified as a pit that contained a charcoal-rich fill with heat-shattered stone. This is probably the remains of a cooking pit. Three linear cuts were identified crossing the area and upon investigation were identified as modern drainage features.

2006:1628 - RATHMULLAN, MEATH

SMR No.: N/A
Licence No.: 06E0783
Author: Matthew Seaver, CRDS Ltd, Unit 8, Dundrum Business Park, Dundrum, Dublin.
Site type: Prehistoric
ITM: E 706405m, N 774461m
Lat, Long: 53.708975, -6.388235

Excavations took place at the IDA Drogheda Business Park, Rathmullan, Co. Meath, in August–September 2006. This followed a programme of assessment and a phase of excavation of Areas A–D by Finola O'Carroll (Excavations 2002, Nos 1508–1511, 02E0183, 02E1265, 02E1267 and 02E1269). Area A revealed a series of pits and post-holes and a backfilled watercourse. Area B had a pit containing Neolithic pottery, a series of pits, hearths and a pit/sump containing a wooden handle. Area C revealed a semicircular triple-walled structure, a trough with associated stake-holes and a series of burnt stone and charcoal spreads. Area D contained a post-medieval structure, a cottage which was present on the first-edition OS map of the area. The 2006 excavations revealed a series of pits and burnt-stone deposits, along with a disused watercourse.

Area E measured 36m east–west by 28m. The area was marked by a north-west/south-east watercourse which was indicated pre-excavation by a wide band of silt cutting through the boulder clay. This feature was 7.5m in width and up to 0.4m in depth and had been truncated by the east–west field

boundary that is present on the 1840 OS map. It had been truncated by two east–west field drains and was filled by a series of silt deposits ranging from orange/brown to grey in colour. The antiquity of this feature is unclear. It clearly pre-dates the post-medieval field boundaries and was detected during test-trenching both to the east and west of the excavated area. A number of post-medieval artefacts were found in the upper deposits. To the west of the excavated area this silt build-up became far deeper and it was clear that considerable amounts of colluvial material had accumulated from the flooding of this watercourse prior to the insertion of drains. It was notable during wet weather that the ground visibly moved with the movement of machinery, demonstrating the waterlogged nature of the ground.

A series of archaeological features were excavated in the south-west of the area, 3m from the watercourse.

A spread of fire-cracked limestone and charcoal-rich soil was located, measuring 3m east–west by 2.6m by 0.13m in depth. This overlay natural boulder clay. A small oval pit, 1.24m by 0.8m by 0.2m in depth, was located immediately 2m south-west of a burnt-stone spread. It was filled with burnt-stone deposits in a charcoal-rich matrix. A large pit (F18), 1.9m by 1.65m by 1m in depth, was located 6m south of the burnt stone. This waterhole cut below the water table and contained heavily waterlogged deposits that included frequent charcoal flecks and lumps, decayed wood and reeds. It had a shelf on its northern and eastern sides and a deeper hollow at its base on the southern side.

A further substantial oval pit (F16), 1.74m by 1.18m by 0.84m, was located immediately west of F18. This was filled by alternating deposits of burnt stone in charcoal-rich sandy clay and grey/orange compact sandy clays.

A further small pit, 0.52m by 0.64m by 0.16m, was excavated 3m north-west of the large waterhole F18. This was filled by dark-brown sandy silt with frequent burnt stone and charcoal. Finally, a further small pit was excavated 2.5m to the west of F18. It was filled by dark-grey silty clay with frequent burnt stone and charcoal.

Area F measured 17.5m east–west by 14m. A total of seven features were uncovered. These comprised an arc of seven shallow ephemeral hollows. A second pit was uncovered to the north-east. The area comprised dry, relatively level ground, with ploughsoil overlying boulder clay.

No artefacts of antiquity were recovered during excavations. A programme of radiocarbon dating is under way and it is expected that the majority of the pits will be shown to be of Bronze Age date.

APPENDIX 11.4
SUMMARY OF FINDINGS OF ASSESSMENT OF FEATURES IN AREAS 1, 2 & 4 (IAC LTD)

Stage ii topsoil stripping and hand cleaning of sites commenced on 2nd March 2020. Works were progressing when government restrictions due to the COVID-19 pandemic forced the temporary closure of the site from 28th March to 5th May 2020. Stage ii works have recently been completed in Areas 1 and 3 and it is now intended to progress these area to Stage iii excavation (preservation by record). Stage ii works are continuing at Areas 2, 4 and 5 with an anticipated completion date of 28th May 2020. Stage ii works were completed in Area 6 in March and no further archaeological mitigation is required.

The following outlines the nature of the archaeological features identified in both Areas 1 - 5 during Stage ii works (Area 6 was identified as not of archaeological significance): -

Townland	Rathmullan, Drogheda, Co Meath
Site name	AREA 1&2 (Figure 1)
Excavation Director	Marc Piera
Grid reference (ITM)	ITM 706642, 774092; 706450, 774220
Site Type	Pit and posthole clusters, including two probable circular structures, a sub-circular enclosure, and associated linear furrows/gullies and a metalled surface
Date of discovery	March/May 2020

Results & comments: Stage (ii)

A total of 102 potential archaeological features were identified following the removal of the topsoil in AREA 1 and the completion of Stage ii archaeological cleaning and recording. The features are quite dispersed with clusters in the north, centre, central eastern and south of AREA 1. Two of the clustered features potentially represent the locations of structures.

In the south-east of AREA 1, a cluster of postholes, oval pits and possible kilns are enclosed by two narrow curvilinear features that may be represent a small enclosure – Structure 1. A sherd of handmade pottery retrieved from one of the features is potentially prehistoric in origin. Some of the pits features contain heat shattered stones in the fill similar to those found in burnt mound type sites, but there is no evidence of a mound. The enclosing gully/slot-trench is c. 13.00m in diameter and has a possible entrance in the south-east. It is 0.40m wide and 0.12m deep where sectioned.

In the north-east corner there is a further cluster of possible postholes which appear to be arranged in a circular plan – Structure 2. The ring of postholes has been truncated by the modern field boundary on their east side although it is possible that further associated features will be identified during completion of Stage ii works in coming weeks. The possible posthole structure is c. 7.5m in diameter. To the west and northwest are spreads of heat shattered stone, although the characteristic blackened soil that usually is identified in association with this type of deposit is not evident. Slightly further to the northwest, close to the northern boundary of the site is a metalled/cobbled surface with minimum extent 3.00m x 2.4m but it possibly continues further as there is a silt wash deposit evident in this area. A fragment of possible medieval pottery was recovered during cleaning of a section of the surface. There are some additional pits and postholes scattered around this general area.

A third possible structure – Structure 3 – is located in the centre of the site. It consists of a short linear feature surrounded by two pits and two postholes. The nature of the postholes is suggestive of a structural function, although further associated remains were not identified.

A total of 144 potential archaeological features were identified following the removal of the topsoil in AREA 2 and the completion of Stage ii archaeological cleaning and recording. The features are dispersed with the majority located in the western half of the area. There is an enclosure in the centre-west of the site with probable structural features internally and a further small circular structure in the NW corner.

An enclosure consisting of a narrow slot-trench has been identified in the centre-west of the site. The sub-circular enclosure measures approx.. 20m x 17.5m. There is no clearly defined entrance although a possible entrance may be located in the NM corner. Other linear slot trenches appear to radiate from it possibly representing an associated field system/land division and some continue into AREA 1 to the west.

Additional isolated features are evident across both AREA 1 & 2. These represent a continuation of associated prehistoric activity but with no clear function or form.

A number of narrow linear features extend across the both areas in generally N-S or E-W orientations and these were generally interpreted as being associated with agricultural drainage. However based on evidence from other areas it is unclear whether these features may have an archaeological origin.

One narrow linear feature extends across the entire area from south to north and may be associated with the different clusters, although with limited direct stratigraphic relationships no definitive connection has been established.

Further isolated pits and possible postholes are also evident across the eastern half of the site

The site is also bisected by a number of post-medieval/early modern drains.
Archaeologically AREA 1 & 2 represent an archaeological landscape dating to the prehistoric period – most likely the late Neolithic/early Bronze Age – with structures and enclosures and associated land/field divisions quite likely associated with a farmstead.

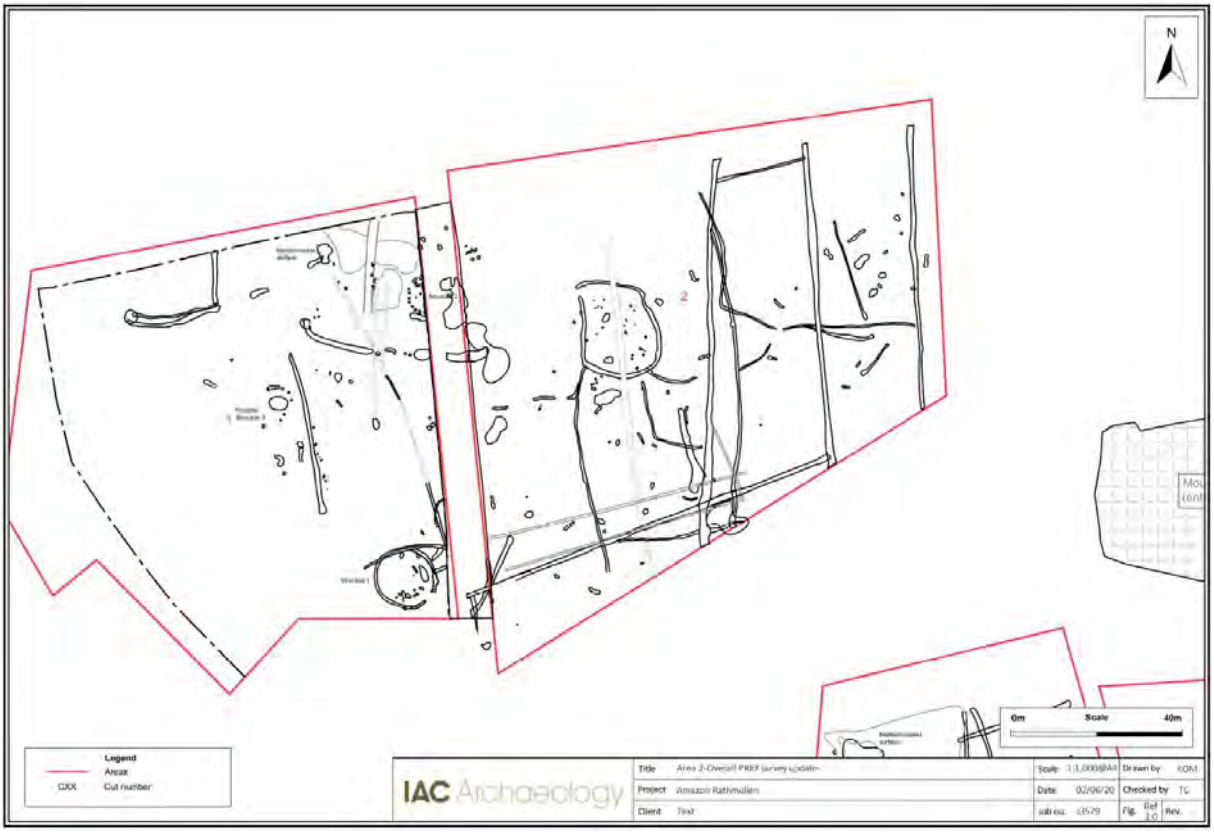

Figure 1: Pre-excavation Plan of Areas 1 & 2

Townland	Rathmullan, Drogheda, Co Meath
Site name	AREA 4 & 5 (Figure 2)
Excavation Director	Marc Piera
Grid reference (ITM)	ITM 706650, 774150
Site Type	Large enclosure with possible working areas (mettle surfaces) Sub-rectangular House structure Pit and posthole clusters with associated linear furrows/gullies Burnt mound pits and troughs
Date of discovery	May 2020

Results & comments: Stage (ii)
The archaeology in AREA 4 & 5 is similar to that identified in AREA 1&2 in that it consists of enclosed areas defined by linear ditches/gullies and localised structures/buildings. There is a higher concentration of activity in the eastern half of the site with a large sub-rectangular area enclosed by a series of ditches with potential small structures and settlement activity within it. A number of features are producing flint and quantities of prehistoric pottery.

In the east of the site there is a sub-rectangular area enclosed by a series of linear ditches. The area measures approx.. 80m (N-S) by 60m (E-W). The NE corner of the enclosure extends beyond the site limits. There are possible entrances/access causeways in the NE and SW corners. The ditches are quite substantial in the NW, N, E and S or the enclosure with depths of up 1.50m recorded and width of up to 4.00m. It is possible that there are at least 2 phases of activity with a distinct re-cut particularly evident in the south. Based on pottery identified within the fills of ditch it is currently interpreted as dating to the Neolithic period.
Internally within the enclosure there are numberous small features, many with no clear pattern. However in the NW of the enclosed area a sub-circular slot trench and an adjacent cluster of small pits/postholes may represent the locations of structures. Extending centrally in the enclosed area (N-S) there are a series of cobbled/mettled surfaces. It is unclear if this represents one single feature or

event or whether it is associated with multiple surfaces. The areas that have been cleaned/investigated have identified flint and bone from within the compacted stone surface. It si currently interpreted that these my related to possible working areas/platforms but the exact function is unclear.
In the west of AREA 4 a rectangular house structure dating to the Neolithic perios has been identified. The house is structure consists of slot-trenches (wall footings) and structural post-holes. The house is approx.. 8m x 6m. A large number of other pits and possible postholes are scattered in the vicinity. A second smaller enclose is evident in the east of the site which is stratigraphically later than the large sub-rectangular enclosure. This is approx. 25m in diameter and may be the site of a ring-barrow dating to the middle Bronze Age. It is possible that some of the later re-cuts of the larger enclosure also date to the Bronze Age.
In the north of the area there are a number of pits and possible troughs associated with burnt mound related activity. While no overlying mound has been identified many of the features are filled with distinctive heat shattered stone in blackened soil.
As previously identified in AREA 1-3, a number of narrow linear gullies/ditches are evident across the area that appear to represent land divisions/field boundaries. One in particular extends to the north of the Neolithic house structure and a direct associated between the two must be considered.
In the north of the site there is a spread of material (E-W) consisting of loose and compacted stones. These are interpreted as being associated with possible patches of mettled surfaces and animal bone and flint have been recovered from the fabric. It is also being considered that this material may be in part geological in origin and while it has an archaeological component may not be exclusively archaeological.
The site represents a continuation of the prehistoric landscape evident in AREAS 1-3 to the west.

Figure 2: Pre-excavation Plan of Areas 4 & 5

12 LANDSCAPE AND VISUAL

12.1 INTRODUCTION

This chapter provides an assessment of the impacts of the Proposed Development on the landscape and visual aspects of the receiving environment.

A full description of the Proposed Development and the construction methodology is provided in Chapter 2 (Description of the Proposed Development).

This chapter is accompanied by a set of Photomontages of the Proposed Development which are included as Appendix 12.1.

The following aspects are particularly relevant to the landscape and visual assessment:

- Design:
  - Form and massing of the Proposed Development;
  - Façade on all above ground structures; and
  - Cognisance of how design elements impact on Views of the Proposed Development and any effects on the receiving environment, including landscape character.

- Operation:
  - Views of the Proposed Development and any effects on the receiving environment, including landscape character.

- Construction:
  - Views of the Proposed Development and any effects on the receiving environment, including landscape character; and
  - Loss or change of existing features that contribute to the receiving environment.

12.2 METHODOLOGY

12.2.1 General

The landscape assessment has considered the likely significant effects of the Proposed Development on the landscape as an environmental resource and the visual assessment has considered the effect of visual change on receptors. Landscape and visual effects have been considered for the construction and operation of the Proposed Development.

Further, to support the assessment, a series of photomontages, illustrating the physical and visual appearance of the Proposed Development, has been prepared from a range of publicly accessible locations that are representative of the more open views in the surrounding environment. The Photomontage views are included as Appendix 12.1.

The following guidelines were considered and consulted for the purposes of the report:

- EPA Draft ‘Guidelines on the information to be contained in Environmental Impact Assessment Reports’ (2017);
- EPA ‘Draft Advice Notes for preparing Environmental Impact Statements’ (2015);
- The Landscape Institute/Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment (3rd Edition);

- European Commission (2017) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report;
- Government of Ireland (2018) Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018); and
- Meath County Development Plan, 2013-2019.
- Louth County Development Plan 2015-2021

The methodology used for the landscape assessment entailed:

- Desktop studies of the site in relation to its overall context locally, regionally and nationally; and
- Visiting the site and its environs between September to December 2019 to assess the following:
  - Quality and type of views in the area;
  - The extent of the visual envelope, i.e. the potential area of visibility of the site in the surrounding landscape; and,
  - The character and quality of the surrounding landscape in relation to the position of the Proposed Development.

12.2.2 Categorisation of the Baseline Environment

The landscape and visual assessment involved visits to the site and its environs, from September 2019 to August 2020, to review the nature and scale of existing development surrounding the site, to identify landscape features, local character and land uses, to identify key views to and from the Proposed Development, and to note receptor sensitivity.

This site-based assessment was augmented by reviewing aerial photography, publications and reports and project information included within the application and in this EIA Report.

12.2.3 Impact Assessment Methodology

The landscape and visual impact assessment for the Proposed Development takes account of the character and nature of the existing site and its surrounds, the location of sensitive landscapes and visual receptors, the sensitivity and significance of the site, and its vulnerability to change.

The classification of significance of effects or impacts as set out in *Figure 12.1* below as included in *EPA Draft 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2017)*, and on the professional experience of the author in carrying out landscape and visual assessments for over 25 years.

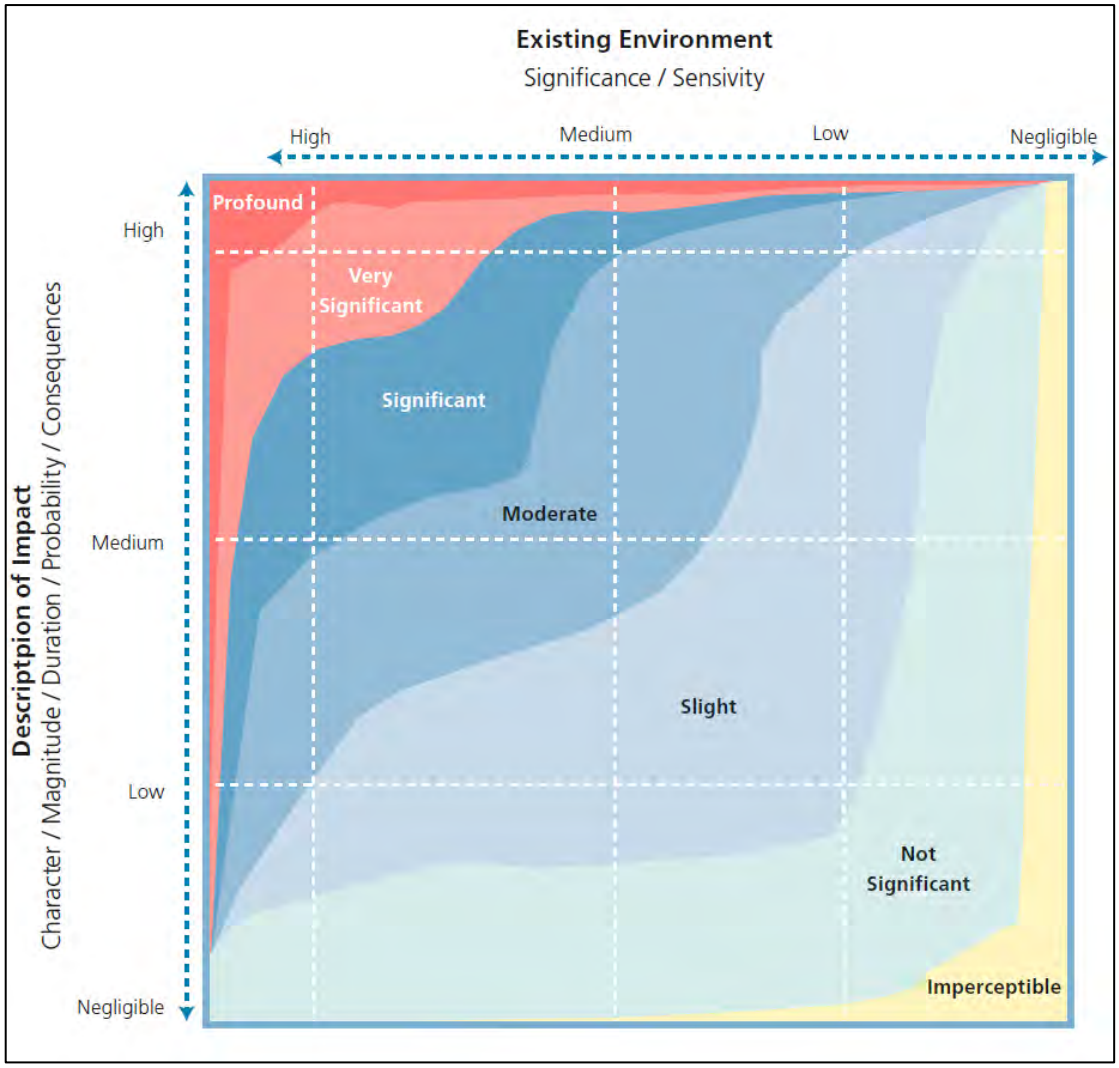

Figure 12.1 Significance of Effects, extract, Figure 3.5, EPA Draft 'Guidelines on the information to be contained in Environmental Impact Assessment Reports' (2017).

The significance of effects are considered in this assessment, where appropriate in accordance with those descriptions outlined in the EPA guidance as set out in Table 1.2 of Chapter 1 (Introduction).

12.3 RECEIVING ENVIRONMENT

12.3.1 Site Location

The site is located c. 2.0km southwest of the centre of Drogheda town in County Louth, and on the Dublin to Belfast corridor. The site is part of an existing and partially developed Industrial Development Authority (IDA) Business and Technology Park on the south western outskirts of the town. The IDA lands currently include the landscaped entrance at the Donore Road, the primary internal road infrastructure and associated landscaping, and mixed woodland planting along the southern, western and northern boundaries. To date, one development has been constructed towards the northern part of the IDA lands comprising a two storey commercial development with surface parking and landscaping, and is occupied by International Fund Services (Ireland) Limited. In addition, construction of a permitted (MCC ref: LB/191735) data storage facility and ancillary development has commenced on the western part of the lands adjoining the motorway.

While the business park presents as being part of the physical environs of the town outskirts, the alignment of the Louth and Meath county boundaries is such that the business park is within the administrative boundary of Meath County Council and adjoining that of County Louth. The site is accessed from Junction 9 of the M1 motorway, joining the Donore Road and leading directly to the IDA Business & Technology Park, the Drogheda Retail Park, and onwards into Drogheda town.

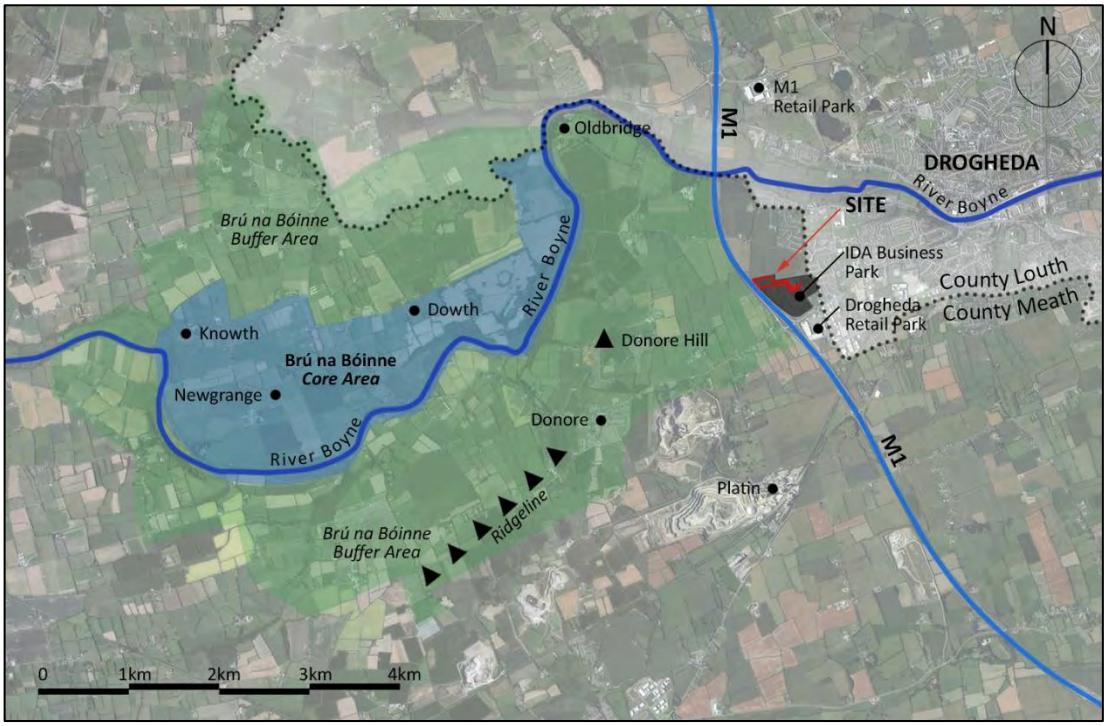

Figure 12.2 Site Location Context, including Drogheda and Brú na Bóinne

12.3.2 Drogheda Town Environs

Drogheda town is one of the oldest towns in Ireland dating back to the late 12th century, a port town established along the River Boyne and c. 6.0 km inland from the Irish Sea. Originally two separate towns on either side of the River Boyne, stone wall defences were built in the late 14th century, and by 1412, the two parts of the town had been unified and Drogheda had become one of the largest walled towns in Medieval Ireland. The River Boyne is a key defining feature of Drogheda, and the built settlement extends c. 2.0km in each direction from the centre of the town, rising as it does either side of the River Boyne.

The landscape south of Drogheda comprises relatively low lying and undulating agricultural lands, and gently falling eastwards to the coastal area. A notable exception is the quarry and cement factory located at Platin to the southwest of Drogheda, and between the M1 motorway and Red Mountain. The quarry itself, given its nature, is not generally visible save for distant elevated vantage points, however, the cement factory kilns and stacks are tall and prominent within the landscape from a wide range of locations and distances.

The landscape north of Drogheda is also mostly agricultural, rising slightly higher that the lands to the south to Cockle Road and Fieldstown at c. 6.0 km north of the town. Until 2003, the only way to cross the River Boyne at Drogheda was via vehicular bridges within the town centre, and heavy traffic congestion was a characteristic of the town. Opening of the M1 motorway, including the Mary McAleese Boyne Valley Bridge to the west of the town relieved traffic congestion in the town, and has allowed the town

to develop as a higher quality settlement with a local and commuting population, but also to expand its commercial, industrial, retail and tourism profile.

12.3.3 Boyne Valley and Brú na Bóinne

The Boyne Valley extends westwards c. 8.0km from Drogheda to Oldbridge, continues in a general south westerly direction for c. 6.0km as Brú na Bóinne, and turns again in a westerly direction for a further 3.0km to Slane.

Brú na Bóinne contains one of the world's most important prehistoric landscapes, dominated by the 5,000-year-old passage tombs of Newgrange, Knowth and Dowth. The '*Archaeological Ensemble of the Bend of the Boyne*' was inscribed on the World Heritage List in 1993. It is also site of the Battle of the Boyne in 1690.

By its nature, the River Boyne is low lying at less than 10m OD, and the terrain rises either side of the river valley to varying extents and in an undulating manner. To the southeast of Brú na Bóinne, a ridge runs in a southwest to northeast direction from Red Mountain to Donor Hill, and typically at c. 100m OD.

The terrain on the northern side of the Bend in the Boyne is gentler, forming an elevated but undulating landscape between Newgrange and Dowth reaching between 40m and 60m OD before falling again to Rossin and the Mattock River.

This latter landscape is regarded as the Core Area of Brú na Bóinne, and is shown in blue shading on *Figure 12.2* above. A Buffer Area is also identified and is shown in green shading.

12.3.4 Local Site Context

The site is part of the IDA Business and Technology Park on the south western outskirts of Drogheda, and on the northern side of Donore Road. The Business and Technology Park occupies lands between the south western residential environs of Drogheda and the M1 motorway. The established Drogheda Retail Park is immediately south of the business park, and lands to the north of the site are in agricultural use with some one-off agriculture related buildings, bound by a local road that leads north eastwards to residential developments in Tredagh (c. 750m north of the Proposed Development site) and Riverbank (c. 330m north of the Proposed Development site).

The M1 Motorway is in substantial cutting at Junction 9, and Donore Road leads to and from the junction at close to the highest terrain level on the eastern side of the motorway. The high point extends north and south of Donore Road, and the terrain then gradually falls to the north, east and south. A roundabout on Donore Road provides access to the Business and Technology Park on the northern side of the road, and the Drogheda Retail Park, other business parks and retail centres on the southern side of the road.

The Business and Technology Park includes the primary infrastructure of the main central access avenue together with a high-quality landscaped entrance facing the Donore Road roundabout. One commercial unit towards the northern end of the park has been built and occupied by International Fund Services (Ireland) Limited.

Construction of a of previously permitted data storage facility and ancillary development has commenced on the western part of the IDA lands where the lands have been cleared and regraded to establish formation levels and perimeter landscape berms, and groundworks including utility infrastructure and foundations are being established. The eastern part of the lands are currently fallow, and partially overgrown.

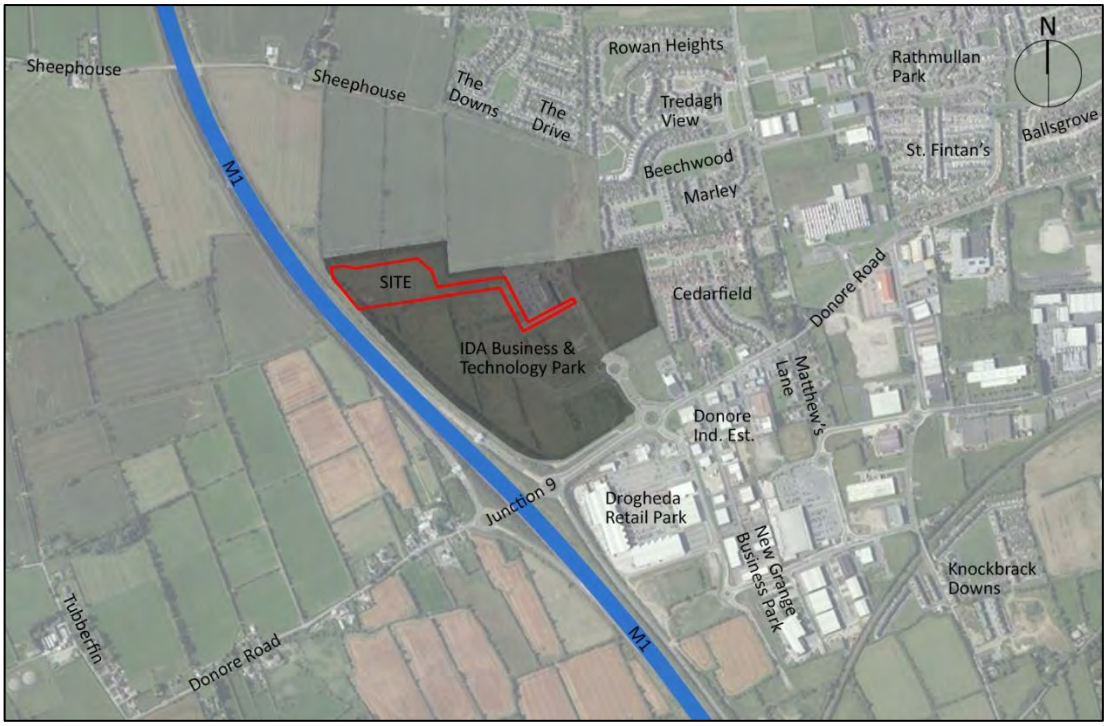

Figure 12.3 Local Site Context

The Drogheda Retail Park south of Donore Road extends to c. 8 hectares, and comprises three primary large scale and multi-occupant retail warehouse buildings to the south, east and west of an extensive surface carpark, and a number of smaller floorplate units on the northern side and set back from the Donore Road. The Donore Industrial Estate and New Grange Business Park are immediately east of the Drogheda Retail Park and comprise c. 13 hectares of mixed size industrial and business units with associated surface car parking and marshalling areas.

12.3.5 The Proposed Development Site

The Proposed Development site extents to c. 3.077 hectares in the north western part of the IDA Business and Technology Park, and within the overall site area of the permitted data storage facility. Access to the Proposed Development site will be from the established main avenue of the IDA Business and Technology Park, and also using the main access gateway and internal access road of the permitted data storage facility that is currently under construction.

The entrance to the business park from the Donore Road presents as a structured, high quality and distinctive landscape, comprising a series of elevated and terraced lawns separated by low stone walls arranged in an organic manner, and with specimen trees on a regular grid forming a backdrop. The main avenue leads from the entrance and is also strongly landscaped. A tree planted median separates the access and egress lanes, and the edges of the avenue are defined by grass verges with bespoke streetlights, together with cycle tracks, low hedging, footpaths and a second grass verge with tree and hedge planting. The avenue incorporates two internal roundabouts, and a number of spurs are formed to provide future access to different development sites.

The external boundaries of the business park include substantial early mature mixed woodland planting along the southern, western and northern boundaries. The eastern side adjoining the residential developments comprises a younger but well-established landscape boundary planting.

Under the Permitted Development (data storage facility), the landscaped entrance to the business park will not be changed, and the structured landscape treatment of the main avenue will be retained and reinforced, including the areas around the main and secondary access gates of that development. The existing perimeter woodland screens are also retained and extended along the northern and southern site boundaries so as to further reinforce the established screening.

The Proposed Development lies within the permitted data storage facility site area and will benefit from both the established and permitted perimeter woodland landscaping.

Figure 12.4 Site Area, within Permitted Development area (light green); IDA Business & Technology Park; and established perimeter woodland landscaping (dark green)

The Proposed Development site, within the Permitted Development site area, has been cleared and graded for archaeological surveys and for the establishment of formation levels for previously permitted access roads and perimeter landscape berms. The new landscape berms along the northern site boundary have been partly formed inside the line of the established woodlands planting, and when complete, will form a continuous landscape berm of 4-5m in height above the general formation level within the site area, and will be planted in spring 2020 as part of the previously permitted data storage facility development.

12.3.6 Development Plan Context

The Proposed Development site is along the eastern extent of County Meath, and adjoining County Louth. Development of the site is therefore guided by the Meath County Development Plan 2013-2019, however, given its adjacency, certain aspects of the Louth County Development 2015-2021 are also relevant.

Land Use Planning

The site, together with the overall IDA Business and Technology Park and the agricultural fields between the site and Sheephouse to the north, are **Zoned E1** in the Meath County Development Plan, with the objective "*To facilitate opportunities for high technology and major campus style office based employment within high quality and accessible locations*".

Lands south of the Donore Road are **Zoned B2** "*To provide for the development of a retail warehouse park".*

Lands north of Sheephouse include lands **Zoned A1** "*To protect and enhance the amenity of development residential communities*"; and lands **Zoned A** "*To provide for new residential communities with ancillary community facilities, neighbourhood facilities and employment uses as considered appropriate for the status of the centre of the Settlement Hierarchy*". The latter are subdivided by phasing objectives. This area, east of the M1 motorway, also includes pockets and strips of lands **Zoned F1** "*To provide for and improve open spaces for active and passive recreational amenities".*

Under the Louth County Development Plan 2015-2021, all of the land to the east of the business park lands are part of the Drogheda Urban Area, and are substantially **Zoned RE**, with the objective "*To protect and/or improve the amenity of developed residential communities".*

Landscape Character Areas

The Meath County Development Plan 2013-2019 includes a Landscape Character Assessment as set out in Appendix 7 and the associated maps. The site area is identified on *Map 01* as being within the *Coastal Landscape*, and part of *Area 7: Coastal Plains*. It is noted that the area immediately west of the M1 motorway is identified as *River Corridors and Estuaries*, and identified as *Area 5: Boyne Valley*, and an extensive area of *Lowlands Landscape*, *Area 6: Central Lowlands*, lies immediately south of the *Boyne Valley* area.

Map 02 Landscape Values, identifies the *Coastal Plains* as *Moderate Value*; the *Boyne Valley* as *Exceptional Value*; and, the *Central Lowlands* as *High Value*.

Map 03 Landscape Sensitivity identifies the *Coastal Plains* and the *Boyne Valley* as *High Sensitivity*; and, the *Central Lowlands* as *Moderate Sensitivity*.

The Proposed Development site is within the southern urban environs of Drogheda and the edge of three distinct *Landscape Character Types* and *Landscape Character Areas*. The M1 defines a strong physical and perceptual boundary between Drogheda and the agricultural hinterland to the west, and the Proposed Development site is zoned for high technology development.

Views and Prospects

The *Meath County Development Plan 2013-2019, Volume 3, Appendix 12*, schedules 94 specific locations throughout the county from which there are protected views and prospects, and these are illustrated on *Map 9.5.1*. Given the quality and high sensitivity of the Boyne Valley, there are a cluster of such locations within and in the vicinity of the Boyne Valley and Brú na Bóinne.

County Meath Views and Prospects
View 61, from the Hill at Sheephouse Graveyard on the top of Donore Hill, is the closest to the development site, and is situated c. 1.0km west and northwest of the site, and on the western side of the M1 motorway. View 61 is described as looking north, east and west, and as "*Expansive view of settled lowland with extensive urbanisation and industry visible to the east and north. Views to the north are extensive and encompass important cultural landscape of significance. Much woodland to north and west.*"

Its elevated position affords panoramic views to the west, north and east, incorporating views over Brú na Bóinne and Oldbridge, and east of the motorway to the higher ground north of Drogheda, and eastwards over Drogheda and to the Irish Sea beyond. View 60, from the Obelisk Bridge at Oldbridge, is the next closest, however the view is to the north westerly direction and away from the Proposed Development site.

Within the core and buffer areas of Brú na Bóinne, a wide range of views are identified however the majority of them are in a specific direction and looking away from the Proposed Development site. Views 59, 97 and 88 are from Knowth, Newgrange and Dowth respectively, and are panoramic views looking in all directions, however, Red Mountain Ridge and Donore Hill lie to the east of the area, and rising to c. 100m OD, obstruct any sightlines towards the Proposed Development site.

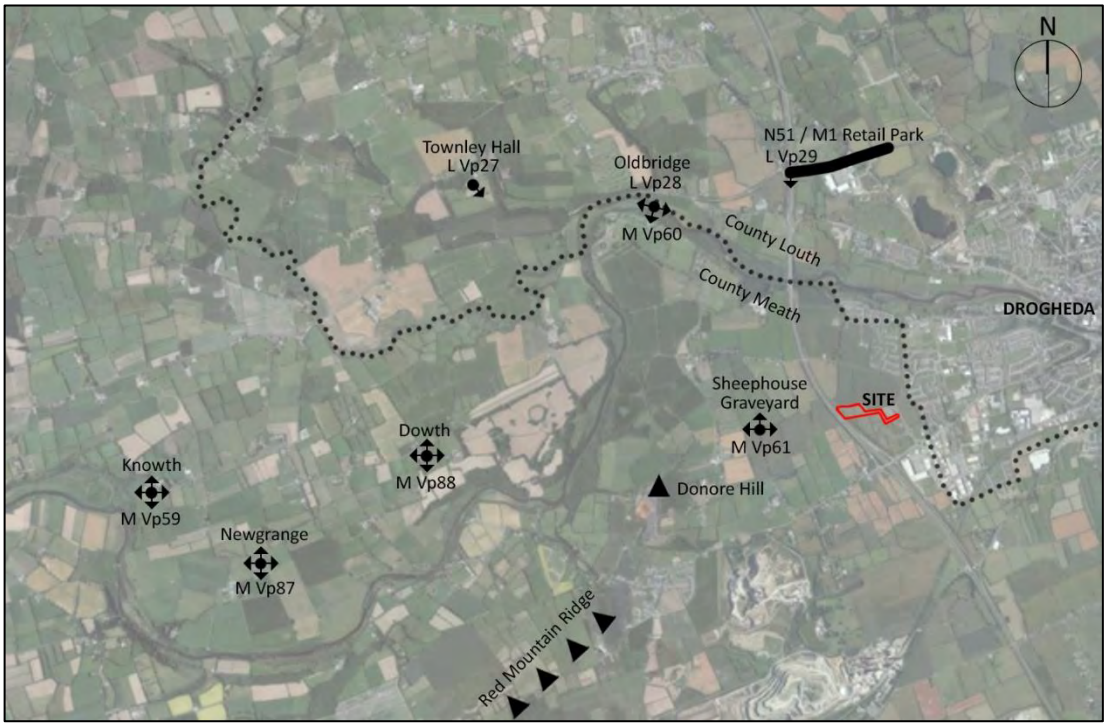

Figure 12.5 Views and Prospects, County Meath and County Louth (relevant views only shown)

County Louth Views and Prospects

The *Louth County Development Plan 2015-2021, Appendix 11*, also identifies protected views and prospects.

View 27 is from the nature trail at Townley Hall and looking southeast towards the Battle of the Boyne site, with partial views of the Battle of the Boyne Visitor Centre and Oldbridge House behind mature deciduous tree planting. Views further southeast are restricted by tree cover and topography.

View 28 is from the N51 at site of the former Obelisk and comprises views up and downstream over the Battle of the Boyne site. The view is contained by the river valley vegetation and topography.

View 29, is from the N51 between the M1 Junction 10 and the Mell Roundabout, looking south. It is noted that the eastern part of this road, from the Mell Roundabout to the M1 Retail Park, is fully enclosed by roadside vegetation, with no views beyond. The western part is dominated by the M1 Retail Park in the immediate foreground – again, with no views to the south. Only at the extreme western part of the road, approaching the motorway and on the motorway overbridge at Junction 10, are there

any views southwards. Approaching the motorway, there are intermittent views to the south beyond roadside hedging, road signage installations and street lighting, and the M1 Retail Park remain prominent in these views. On the motorway overbridge, while there is a distant view available, the landscape of the view is already highly modified with motorway infrastructure, landscaped embankments, the Mary McAleese Boyne Valley Bridge and the Irish Cement factory at Platin being prominent in the view.

Other Designations

There are no protected trees, woodlands, hedgerows or protected structures pertaining to the site. It is noted that the previously permitted data storage facility development at the IDA Business and Technology Park includes a condition of permission to retain the established perimeter woodland planting on the lands.

Likewise, there are no Candidate Special Areas of Conservation, Special Protection Areas or Proposed Natural Heritage Areas.

Landscape and Visual Significance and Sensitivity

The Proposed Development site is located within a partially established Business and Technology Park and within a permitted data storage facility development at the outskirts of the southern built environs of Drogheda town.

The land use zoning of the Business and Technology Park and lands further north anticipates high technology development on these lands with direct access to the M1 motorway at Junction 9.

The site is not considered to be significant or sensitive from a landscape and visual aspect. The lands are appropriately zoned, located within an environment that includes an establishing business park with additional zoned lands to the north, established retail and business parks south of Donore Road, and an adjacent motorway. Residential developments are located to the east, along the eastern side of the overall business park.

The northern and western sides of the development site are enclosed by substantial early mature mixed woodland screening, and with additional landscape berms currently being formed along the northern site extents. The eastern and southern sides are effectively within the permitted data storage facility site that is currently under construction.

Potential sensitive receptors will include:

- the wider landscape setting of Drogheda;
- designated Views and Prospects, including Brú na Bóinne:
- residential areas to the east of the site; and,
- other areas in the locality of the site.

12.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development will consist of:

- A GIS substation building, measuring 53m in length, 16m in width, and 15m in height.
- Client control building, measuring 40m in length, 12m in width, and 6m in height.
- Two dropdown 110kV transmission lines comprising two new masts (c. 16m in height), and underground 110kV cables.
- 4 No. transformers
- 49kVA (underground) electrical supply

The Proposed Development, apart from the two new masts, will be located within a compound measuring c. 78m by 100m secured by a 2.6m high palisade fence, and with the marshalling area extending c. 5.0m beyond the perimeter security fence on all sides. The two new masts will be located at the north western extent of the site where the existing 110kV power line traverses the corner of the site. A new landscape mound will be formed between the two new masts and the secure compound and will rise to c. 6.0m above site formation level.

The landscape strategy avails of the established screen planting along the western and northern boundaries of the overall site area, and will further avail of the new landscape berm being implemented as part of the permitted data storage facility development.

A complete description of the Proposed Development is provided in Chapter 2 (Description of the Proposed Development).

12.5 LIKELY SIGNIFICANT EFFECTS

The new Proposed Development has the potential to impact on the immediate site environs or the surrounding site context, or both. The quality of impacts can be positive, neutral or negative, and the significance of impacts is determined by the particular characteristics of the Proposed Development and the existing context.

The Proposed Development will involve the construction of additional built and infrastructural development on lands within an emerging Business and Technology Park, including substantial high-tech development already under construction, other undeveloped sites, and within a wider land area that is zoned for such high technology development. The Proposed Development is ancillary to the permitted data storage facility development that is under construction and is of a modest relative scale.

Landscape and visual effects are discussed below, during construction and in operation, for each receptor type identified in *Section 12.3.6* above.

12.5.1 Do-Nothing Scenario

In the event that the Proposed Development does not proceed, the site will remain unchanged until such time as a similar or alternative development consistent with the land use zoning is granted permission and constructed.

12.5.2 Assessment of Effects During Construction

During construction of the Proposed Development which is anticipated to take c. 12 months starting in the first half of 2021, potential landscape and visual effects will arise from:

- Site establishment, provision of contractor's compound, provision of fencing and site hoarding, etc.;
- Earthworks, including cut and fill, to establish formation levels for construction;
- Excavation for foundations and underground utilities;
- Stockpiling of topsoil and subsoil for later reuse in landscaping and establishment of landscape berms;
- Access and egress of construction traffic for material import and export;
- Erection and operation of cranes;
- Construction traffic movement on site;
- Construction site lighting;
- General construction activity, including construction and security personnel, and construction machinery;
- Gradual emergence of the Proposed Development on the site;
- Provision of landscaping and planting etc.; and
- Completion and commissioning of the Proposed Development.

It is noted that the construction stage will overlap with the ongoing construction of the permitted data storage facility, and that the Proposed Development is substantially smaller in scale and extent, and localised to the northwest corner of the wider development site.

Effects on Landscape Character

Effects on landscape character during construction will be temporary to short term and will generally vary from ***not significant*** to ***slight***, and from ***neutral*** to ***negative***.

During the initial construction stage, effects on landscape character will be mostly limited to the immediate environs of the site and the existing business park, with construction activity focussing on low level works such as ground works, terrain modelling, foundations, utilities and formation of the marshalling area. Site works will not be prominent from public roads in the wider locality, with the exception of site related vehicular movements to and from the site.

As construction progresses to the building structures, the structural frames, slabs and cladding systems of the buildings will begin to appear. In addition, construction activity, including cranes, other construction traffic and construction personnel, will become more apparent and intense. As construction progress, the new building and infrastructural forms will emerge on the site, and will form new elements within the site that may also be apparent from some locations within the wider landscape setting.

Wider Landscape Setting
The wider setting includes the elevated agricultural lands to the north of Drogheda from where the town environs is part of the landscape character, and the coastal edge extending from Laytown in the south to Termonfeckin in the north.

North of Drogheda, from the agricultural lands c. 6.0km and more from the site, the terrain rises to as much as 170m OD. From these elevated locations, the landscape character is of rolling agricultural fields in the foreground and middle ground, leading

to Drogheda town set within the river valley, and set against the backdrop of the more southern hills at Red Mountain and Bellewstown in the distance. The Irish Cement factory at Platin is also prominent in these views. Construction of the Proposed Development will be within that context, and within the more immediate context of the permitted data storage facility development, and will give rise to a ***not significant*** and ***neutral*** effect on landscape character.

The coastal area of Drogheda is c. 6.0km east of the site, at sea level, and with a diverse and complex built and natural environment of the town and River Boyne lying between the coast and the site. As such, effects on landscape character will be ***not significant*** and ***neutral***.

Designated Views and Prospects
As noted in Section 12.3.6 above, there are a range of designated views and prospects within the Brú na Bóinne and Boyne Valley area. Many of these are directed at specific areas of landscape, and not looking in the direction of the site, and will not be impacted by the Proposed Development. Relevant Views and Prospects are shown in *Figure 12.5* above.

The panoramic protected views at Knowth, Newgrange and Dowth, at set at elevations of c. 40m to 60m OD, and the ridgeline at Red Mountain and Donore Hill to the east rises to c. 100m OD, and will obstruct views towards the Proposed Development, where the maximum built elevation will be under 90m OD and c. 2.0km further east of the ridgeline. The Proposed Development will have no impact on the landscape character of Knowth, Newgrange and Dowth.

There is a protected view just east of the entrance to Townley Hall, from the nature trails and looking southeast towards the Battle of the Boyne site, with partial views of the Battle of the Boyne Visitor Centre and Oldbridge House behind mature deciduous trees. The Proposed Development site is over 4.0km from this location and is entirely screened by middle ground tree cover and topography.

There is a protected view along the county boundaries, and designated in both development plans, at the site of the former Obelisk between the N51 and the River Boyne. This view location is confined to the local setting of the river crossing, and the area of the Proposed Development site is c. 3.0km to the southeast and entirely obscuring by the immediate river valley vegetation and topography.

A protected view is from the N51 between the Mell Roundabout, the M1 Retail Park and the M1 motorway overbridge at Junction 10. As noted above in Section 12.3.6, there are limited view locations from this area that are not obstructed by roadside vegetation and the buildings of the M1 Retail Park. In the immediate vicinity of the motorway, it is possible to see southwards, however, the landscape character is highly modified by the built environment of the retail park, the motorway infrastructure, the Mary McAleese Boyne Valley Bridge, the Irish Cement factory in the distance, and glimpses views of elements of the permitted data storage facility becoming visible. Construction of the Proposed Development will have ***slight*** and ***negative*** effect on landscape character.

The closest protected view is from the Graveyard Sheephouse, c. 1.0km to the west of the site. The landscape character is of the historic graveyard in the immediate foreground, and of the expansive views to the west, north and east of the Boyne Valley, Oldbridge and the built environment of Drogheda. The permitted data storage facility is under construction and beginning to emerge within the eastern periphery of that expanse. The Proposed Development will be substantially smaller than the permitted

data storage facility, and effects on landscape character by virtue of its construction will be ***not significant*** and ***neutral***.

Residential Areas
Residential areas are located to the east and northeast of the site, at distances of 200m to 350m. Effects on landscape character from these areas will be ***slight*** and ***neutral*** as construction of the Proposed Development will introduce new built and infrastructural elements that will be set back from the ongoing site development and construction works associated with construction of the permitted data storage facility.

Other Areas in the Locality of the Site
With the locality of the site area, including the Donore Road, the Drogheda Retail Park, the local road north of the site at Sheephouse, effects on landscape character will range from ***slight*** to ***not significant*** as the development will be set back beyond the ongoing site development and construction works associated with construction of the permitted data storage facility. From the adjacent motorway and including the overbridge at Junction 9 leading to the site, the existing landscape screening is such that effects on landscape character will be ***not significant*** and ***neutral***.

Effects on Views

Effects on views during construction will be ***temporary to short-term*** and will vary from ***slight to not significant***, and from ***neutral to negative***.

Wider Landscape Setting
From vantage points in the wider landscape setting of Drogheda, construction of the Proposed Development will give rise to intermittent long-distance views where the emerging development may be noticeable within the wider view, and may give rise to ***not significant/slight*** and ***negative*** effects on views.

Designated Views and Prospects
As discussed previously, many of the designated views and prospects within the Brú na Bóinne and Boyne Valley area are directed away from the Proposed Development site, and will not be impacted by the development. Sight lines from Knowth, Newgrange and Dowth in the direction of the development site are obstructed by the ridgeline at Red Mountain and Donore Hill, and there will be no visual impact from these important locations. Similarly, sight lines from the designated view at Townley Hall nature trail are obstructed.

At the Junction 10 overbridge to the north, part of a protected view, the existing view is momentary in nature, and already comprises manmade elements in the foreground, middle ground and the distance. The Proposed Development will be also become visible, but at a distance of 2.5km, will be consistent with other built elements in the view, giving rise to visual effects that are ***slight/not significant*** and ***neutral***.

The view from Sheephouse Graveyard to the west of the site will include the emerging development in the context of the southern environs of Drogheda, and against the backdrop of the established Drogheda Retail Park and the emerging data storage facility. The development will occupy a small portion of the expansive view of the Boyne Valley, Oldbridge and Drogheda town, and effects of the overall view will be ***not significant*** and ***neutral***.

Residential Areas
Construction activity and the Proposed Development will be set back from the ongoing site Proposed Development and construction works associated with the permitted data storage facility, and the resulting effects on views will be ***not significant*** and ***neutral***.

Other Areas in the Locality of the Site
At the Donore Road, the Drogheda Retail Park, and the local road north of the site at Sheephouse, effects on views during construction will be ***imperceptible/not significant*** as the Proposed Development and associated construction activity will be substantially out of view by virtue of established landscape screening and built forms.

12.5.3 Assessment of Effects During Operation

Landscape and visual effects during operation will be ***long-term/permanent*** and will range from ***imperceptible*** to ***slight***, and from ***neutral*** to ***negative***.

Effects on Landscape Character

Wider Landscape Setting
Within the wider landscape setting of Drogheda, the Proposed Development will be substantially smaller than the permitted and emerging data storage facility development, and where visible, will be seen against that larger context. The landscape character of these locations generally comprises either the rolling agricultural or coastal landscape, with distant hills, townscape or skylines. The Proposed Development will be noticeable but not prominent from such locations, and its effects on landscape character will be ***not significant***.

Designated Views and Prospects
The designated views and prospects within the Brú na Bóinne and Boyne Valley area, including at Knowth, Newgrange and Dowth, and Townley Hall nature trail, are remote and visually separated from the Proposed Development site area, and the Proposed Development will not impact on the landscape character of these areas.

At the Junction 10 overbridge to the north, part of a protected view, the landscape character includes manmade elements in the foreground, middle ground and the distance, and the permitted data storage facility is under construction in the distance. The Proposed Development will be an additional built element, but at a distance of 2.5km, and effects of landscape character will be ***slight*** and ***neutral***.

At the Sheephouse Graveyard, the Proposed Development will an additional built and infrastructural element within an emerging local context at the periphery of the expansive landscape of the Boyne Valley, Oldbridge and Drogheda town, and effects on landscape character at this location will be ***slight*** and ***negative***.

Residential Areas
The Proposed Development will be set back from the emerging data storage facility, giving rise to effects on landscape character that are ***not significant***.

Other Areas in the Locality of the Site
The landscape character of areas within the site locality, including Donore Road, the Drogheda Retail Park, the local road to the north of the site at Sheephouse, and the nearby motorway, but continue to be informed by their existing contexts of the IDA Business and Technology Park entrance area, the retail park and car parking facility, the agricultural fields, and the motorway corridor respectively. The Proposed Development will be substantially screened by existing built forms and vegetation as well as being set back beyond the emerging data storage facility, and effects of landscape character will generally be ***not significant***.

Effects on Views

Wider Landscape Setting
The Proposed Development may be occasionally visible as a glimpse view from distant vantage points in the wider landscape setting of Drogheda. From such locations, the Proposed Development will be beyond the foreground agricultural or coastal landscape, and a small element of the wider development on these lands such that the effect on views will be ***not significant***.

Designated Views and Prospects
Views in the directions of the Proposed Development from designated views and prospects within the Brú na Bóinne and Boyne Valley area, including at Knowth, Newgrange and Dowth, and Townley Hall nature trail, are obscured by intervening topography and vegetation, and will not be impacted by the Proposed Development.

At the Junction 10 overbridge to the north, part of a protected view, the existing view is momentary in nature and comprises manmade elements in the foreground, middle ground and the distance. The Proposed Development may be partially visible in the distance and against the backdrop of the wider development on these lands. Effects of the view will be ***not significant/slight*** and ***negative***.

At Sheephouse Graveyard, the Proposed Development will be substantially smaller than the permitted data storage facility that is under construction, and peripheral to the expansive landscape of the Boyne Valley, Oldbridge and Drogheda town, and effects the view from this location will be ***not significant***.

Residential Areas
Views of the Proposed Development from the residential areas to the east will be limited by virtue of the site area being set back to the western side of the wider site development, and effects of views will be ***not significant***.

Other Areas in the Locality of the Site
The effect on views at the entrance to the IDA Business and Technology Park on Donore Road, and areas within the Drogheda Retail Park, will be ***imperceptible*** as the Proposed Development will be beyond the emerging data storage facility.

At Sheephouse to the north of the site, effects on views be ***slight*** and ***neutral*** as the Proposed Development will be substantially screened by the established woodland screen along the northern site boundary and consistent with the other existing power transmission infrastructure in the locality.

Along the M1 motorway and at Junction 9 leading to Donore Road, the existing landscape screening is such that effects on views will be ***not significant*** and ***neutral***.

12.6 MITIGATION MEASURES AND MONITORING

12.6.1 General

The Proposed Development is ancillary in nature and scale to the permitted data storage facility that is currently under construction on these lands.

The Proposed Development is located to the north western corner of the wider Permitted Development site and as such, will benefit from being more remote from potentially sensitive vantage points, and will also be afforded a substantial amount of screening by the established and permitted woodland planting on the northern and western sides of the site.

Site Layout and Building Design

The GIS Substation building is the largest structure within the Proposed Development, and is oriented in a north to south direction so that only the shorter elevation might appear over the established tree screening from vantage points to the north. Additionally, the building is to be finished using a similar palette of materials to that of the permitted data storage facility buildings.

The Permitted Development on these lands, including the reinforcement of the northern boundary screening through the incorporation of additional landscape berms and mixed woodland planting, is such that the Proposed Development will be substantially contained within this portion of the overall lands, thereby limiting potential visibility from beyond the Proposed Development boundary.

Site Landscape

The landscape strategy takes advantage of both the established and permitted perimeter landscaping at these lands so as to substantially screen the Proposed Development from beyond the immediate site area. An additional landscape berm will be provided between the secure compound of the Proposed Development and the new masts adjacent to the western boundary, thereby providing a further layer of screening from westerly viewpoints.

The Proposed Development will not give rise to any changes to the established structured landscaping that is part of the IDA Business and Technology Park.

Mitigation During Construction

The site should be managed in an orderly manner, with perimeter fencing and hoarding kept in good condition, and vehicular access managed to avoid congestion outside the Proposed Development site. All vehicular traffic leaving the site should be clean, and the local road network kept clean in accordance with the CEMP.

Existing trees to be retained should be protected in accordance with BS 5837: 2012 so as to ensure their integrity and vitality. Topsoil and subsoil for the establishment of fill, berms and landscaped areas should be retained and stored appropriately on site for later re-use, including for the reinstatement of temporary construction compounds and working areas upon completion.

Mitigation During Operation

The architectural and landscape design of the Proposed Development incorporates visual mitigation measures that will be fully implemented during construction. Management and maintenance of mitigation features thereafter will ensure their effectiveness in the medium and longer term. Maintenance of site lighting, incorporating horizontal cut-off light fittings, is also important to ensure light spill is minimised.

12.6.2 Monitoring

Mitigation During Construction
During construction, the contractor will ensure that the site is managed and maintained in an orderly manner and in accordance with the CEMP, with particular care and attention to perimeter areas that might give rise to adverse landscape and visual effects from outside the construction site

Mitigation During Operation
All landscape works will be maintained in line with normal landscape maintenance / management works and failed and/or defective works will be made good, as required, on a regular basis.

12.7 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

Residual effects are described with reference to a series of Accurate Visual Representations (AVRs) included in Appendix 12.1 and include views from representative of the views towards the site from the vicinity of the Proposed Development site and from the wider area.

The locations of the AVRs are indicated on Figure 1.0 View Location Map in Appendix 12.1, and for each view, the following variations are provided:

- Baseline, prior to development of the permitted data storage facility;
- As Permitted, showing (where applicable) the permitted LB/191735 development;
- As Proposed, showing (where applicable) the permitted LB/191735 development and the Proposed Development; and,
- Cumulative, showing (where applicable) the permitted LB/191735 development and the Proposed Development; and in combination with future indicative Masterplan development of two further data storage facilities. Commentary on the Cumulative version is provided in Section 12.9 below.

Where the above-mentioned developments are fully screened, their profile is showing in a coloured outline only, with a green outline for the previously permitted LB/191735 development, and a red outline for the Proposed Development. In all Cumulative versions, whether visible or screened, the future indicative Masterplan development of two further data storage facilities is shown in a yellow outline only.

The series of AVRs in Appendix 12.1 are from representative locations within the different receiving environments discussed above and of the landscape context of the Proposed Development

Views 1 and 2 are from the M1 motorway approaching the Junction 9. *Figures 1.1.1 and 1.2.1*, and *Figures 1.1.2 and 1.2.2* show the Existing and Permitted conditions, with strong landscape screening and visual enclosure along the motorway corridor, with only the overbridge at Junction 9 and associate lighting poles being visible, and the Permitted Development entirely screened by existing motorway planting..

Figures 1.1.3 and 1.2.3 illustrate the profile of the Proposed Development in a red outline however, it too will be entirely screened by established vegetation, and landscape and visual effects are ***imperceptible*** and ***neutral***.

View 3, *Figure 1.3.1 and 1.3.2*, is from The Green c. 400m northeast of the site and shows the existing residential context of semi-detached dwellings arranged around an

open amenity space. At the far side of the open space, a block wall defines the boundary with the agricultural lands beyond. The agricultural land is part of the E1 zoned lands to the north of the IDA Business and Technology Park. The upper portion of the existing International Fund Services (Ireland) Limited development within the IDA lands is visible in the distance, and the Permitted Development will be partially visible at a further distance again.

Figure 1.3.3 includes an outline of the Proposed Development in red, and indicates the Proposed Development will be substantially out of view and screened by the foreground dwellings, with landscape and visual effects are considered ***not significant***.

View 4, *Figure 1.4.1 and 1.4.2*, is from the open space along Marley's Lane, c. 650m from the site, and looking into Beechwood Drive. The residential dwelling surround and define the public open green spaces, and there are glimpse views beyond the dwellings of the existing International Fund Services (Ireland) Limited development within the IDA lands and of some of the woodland planting in the vicinity of the site, and the emerging permitted data storage facility will become partially visible in the distance on the skyline above the intermediate houses.

Figure 1.4.3 includes an outline of the Proposed Development in red and illustrates the Permitted Development will be entirely screened by middle ground dwelling houses. It is noted that by moving to the left of right of this particular vantage point, there may be glimpse views of the taller elements of the Proposed Development, however, at the distance and with layers of intervening development, the landscape and visual effects are considered ***not significant***.

View 5, *Figure 1.5.1 and 1.5.2*, is from the Cedarwood Close c. 200m from the site, and southwest. The open space at Cedarwood Close adjoins the IDA lands, however a combination of block walls and established boundary planting provide substantial screening of the land beyond, and the Permitted Development will be fully screened.

Figure 1.5.3 does not extend far enough to the north (right) to include the area of the Proposed Development, however, it is clear that the nature of the boundary screening and the built dwellings would entirely screen any possible view of the Proposed Development

View 6, *Figure 1.6.1 and 1.6.2*, is from roundabout on the Donore Road at the entrance to the Drogheda Retail Park and looking across the roundabout towards the landscaped entrance area of the IDA business and Technology Park. The character of the area is defined by the retail and business parks, and the distinctive landscaped entrance area features strongly. The northernmost buildings of the retail park are prominent (out of view) to the left of the view. The approach road to Junction 9 can be seen beyond the roundabout, and the Permitted Development will be visible but set back behind the layers of intermediate landscaping.

Figure 1.6.3 includes an outline of the Proposed Development in red, and illustrates that at the northern extent of the overall site area, and with intermediate landscaping, it will be fully screened, and landscape and visual effects will be ***not significant***.

View 7, *Figure 1.7.1 and 1.7.2*, is from the southern extent of the Drogheda Retail Park at c. 600m from the site. The character of the area is that of a typical retail park, comprising substantial buildings and extensive surface parking areas. The smaller retail units along the Donore Road boundary are visible beyond the carpark, and the Permitted Development will be apparent on the skyline, however, at a greater distance

than the retail units, its parapet lines will be broadly consistent with that of the retail units.

Figure 1.7.3 includes an outline the Proposed Development in red and illustrates it will be entirely screened and not visible such that landscape and visual effects are considered ***none***.

View 8, *Figure 1.8.1 and 1.8.2*, is from the overbridge at Junction 9 at c. 125m from the overall site boundary and illustrates the strong motorway landscaping along the southbound off-ramp, together with the additional mixed woodland planting along the western site boundary behind. The structure of the toll booths on the off-ramp is partially visible between the two layers of landscaping, and with only a glimpse view of the south eastern corner of the Permitted Development becoming visible once complete.

Figure 1.8.3 includes an outline of the Proposed Development in red and illustrates it will be substantially screened by the established woodland screening with landscape and visual effects are considered ***not significant*** and ***neutral***.

View 9, *Figure 1.9.1 and 1.9.2*, is from the top of the entrance steps to the Sheephouse graveyard, c. 1.0km west of site. The view shows part of the historical character of the graveyard in the foreground, with rolling agricultural lands leading to the outskirts of Drogheda town in the distance. The view does not extend to the south (right) by virtue of field boundary hedges immediately south of the graveyard but does extend to the north and west (left) to reveal an expansive view over Drogheda town, Oldbridge and the Boyne Valley. As noted previously, Sheephouse Graveyard is the location of a designation protected view. The Permitted Development will be partially visible as an extension of the built environment of Drogheda.

Figure 1.9.3 includes an outline of the Proposed Development in red, and illustrates it will be entirely screened by foreground vegetation from this particular viewpoint. It is note that by moving further north into the graveyard, the upper parts of the development may become partially visible in a similar manner to the established and Permitted Development in the Donore Road area of Drogheda, with landscape and visual effects are considered ***slight*** and ***negative***.

View 10, *Figure 1.10.1 and 1.10.2*, is from the local road at Sheephouse to the north of the site, and c. 450m from the north site boundary. The fields in the foreground are part of the E1 zoned lands that extend northwards from the Ida lands. The view is representative of the view from the residential development of The Downs and the Drive further east. The existing northern site boundary can be seen on the skyline. The Permitted Development is set back further south than the northern boundary which is on the skyline in the view, and screened as such.

Figure 1.10.3 includes the Proposed Development and illustrates that the northern parapet and of the GIS Substation building will be visible above the woodland tree screening, and the two new masts will be visible in the context of the existing power transmission infrastructure in the foreground and middle ground, with landscape and visual effects are considered ***slight*** and ***neutral.***

View 11, *Figure 1.11.1 and 1.11.2*, is from the overbridge at Junction 10 of the M1 motorway, north of the River Boyne, and c. 2.5km from the site. The view is substantially one of contemporary road infrastructure including boundary landscape screening along the road corridor and the distinctive Mary McAleese Boyne Valley Bridge. Agricultural lands are visible in the distance, and the Irish Cement facility is prominent on the skyline, and the lighting columns at Junction 9 and the Drogheda

Retail Park are also apparent. A similar distant view is available just east of Junction 10 from the N51 that does not include the motorway, however, it does include the M1 Retail Park that is located just off the junction. As noted previously, the views from the N51 (from Mells Roundabout to Junction 10) are designated views and prospects.

The Permitted Development will be apparent on completion, including the northern elevation of the building incorporating the translucent cladding panels, generator flues, and rooftop plant screening will be visible on the skyline in the distance.

Figure 1.11.3 includes the Proposed Development and illustrates that the parapet of the GIS Substation building will be partially visible over the established woodland screening, and the two new masts will present in a similar manner to existing masts in the view, with landscape and visual effects considered ***slight*** and ***negative.***

View 12, *Figure 1.12.1 and 1.12.2*, is from Cockle Road c. 6.0km north of the site and illustrates the rolling agricultural landscape character leading to the built environs of Drogheda town along the River Boyne, and beyond to the more distant hills at Bellewstown, Red mountain and Donore Hill. The Irish Cement factory is prominent in the view, and the northern and eastern elevations of the Permitted Development will be seen above the landscape context of the site locality, but substantially below the skyline.

Figure 1.12.3 includes an outline of the Proposed Development in red and illustrates that it will be effectively screened by intervening landscape and terrain, with landscape and visual effects considered ***not significant.***

Views 13, 14 and 15, *Figures 1.13.1, 1.13.2, 1.14.1, 1.14.2, 1.15.1.and 1.15.2*, are from the monuments at Newgrange, Knowth and Dowth respectively, all of which are designated panoramic views and prospects. The Permitted Development is shown in each case in a green outline and will not be visible

Figure 1.13.3, 1.14.3 and 1.15.3 include an outline of the Proposed Development in red, and illustrate that this development will also be fully screened from these viewpoints.

12.8 RESIDUAL EFFECTS

The Proposed Development site is located at the south western environs of Drogheda town, and inside the M1 motorway that defines the boundary between the town and the agricultural hinterland.

The Proposed Development site is within an existing and evolving IDA Business and Technology Park, and within the site area of a permitted data storage facility development that is currently under construction. The site is part of a wider area of land zoned for high technology development.

Drogheda is located on the River Boyne, and the Boyne Valley is a landscape of high quality and high sensitivity, not least for its natural landscape, but also for the megalithic passage tombs of Newgrange, Knowth and Dowth, and the cultural heritage of the Battle of the Boyne at Oldbridge.

Landscape and visual effects arising from the Proposed Development will not be significant, and will generally range from ***slight to moderate***, and from ***neutral to negative***. Importantly, the Proposed Development will not impact on the Brú na Bóinne area incorporating the megalithic passage tombs.

The cumulative impact assessment is addressed Chapter 16 of this EIA Report. Interactions are addressed in Chapter 17 of this EIA Report.

12.9 CUMULATIVE EFFECTS

The assessment of cumulative effects in terms of landscape and visual impact has considered the Proposed Development, in combination with:

- proposed, permitted and planned developments in the area, including in particular the permitted and future indicative data storage facility development (two further data storage facilities).

The Proposed Development is located within the site area of the Permitted Development, and will occupy the north western corner of the overall site where there is substantial established perimeter woodland screening along the northern and western sides, and the southern and eastern sides face directly into the wider development side. The scale and massing of the Proposed Development is modest relative to the Permitted Development, such that the Proposed Development will only give rise to a modest intensification, if any, of the landscape and visual effects, both during construction and in operation. It is noted that construction of the Proposed Development will take place within the overall construction programme for the wider Permitted Development, and will not there extend the overall construction period.

Cumulative effects, in combination with the Permitted Development, will be ***not significant***.

Cumulative effects, in combination with the future indicative data storage facility development will be greater, however, this increase will be attributable to the future indicative Masterplan development rather than the Proposed Development by virtue of the relative scale anticipated for these.

The Proposed Development is located on lands at the outskirts of Drogheda town, adjacent to the M1 motorway, and within the immediate context of a partially established Business and Technology Park and the Drogheda Retail Park. The site, as existing, has substantial woodland screening along its southern, western and northern sides, and, to the east of the site, there are undeveloped sites within the Business and Technology Park that provide a separation between the site and the nearby residential developments.

The wider context, to the west, north and south, is of rolling agricultural lands, and includes the River Boyne. The Boyne Valley is a landscape of high quality and high sensitivity by virtue of its natural landscape, the megalithic passage tombs of Newgrange, Knowth and Dowth, and the cultural heritage of the Battle of the Boyne at Oldbridge. These important areas are screened from the site by the intervening ridgeline at Red Mountain and Donore Hill.

Cumulative effects during construction will extend the overall duration of construction activity within the area. The indicative further data storage facilities are somewhat closer to some residential receptors, giving rise to moderate and negative cumulative landscape and visual effects. In the wider landscape, the cumulative construction and development area will render the development site more prominent in the landscape, and cumulative landscape and visual effects, where the site area is visible, will generally be moderate and negative. Importantly, cumulative developments will not be visible from the area of the passage tombs at Brú na Bóinne or from the Battle of the Boyne at Oldbridge.

Cumulative effects during operation will intensify the high-tech and industrial character of the south western Drogheda environs, which also includes the Drogheda Retail Park, introducing substantial additional built elements that will be visible to a greater or lesser extent from local and wider vantage points. Locally, and where visible, cumulative effects are likely to be perceived as moderate and negative, however, these will become more neutral as developments become established and operational. In the wider landscape, cumulative effects, where visible, will vary depending on the relative elevation of the vantage points. From higher vantage points, the buildings will be seen in the distance against a backdrop of landscape and other buildings, whereas, from lower elevations, the buildings will present on the skyline. Cumulative landscape and visual effects will generally be moderate and negative. Cumulative developments will not be visible from the area of the passage tombs at Brú na Bóinne or from the Battle of the Boyne at Oldbridge.

Cumulative landscape and visual effects are illustrated in the series of Accurate Visual Representations included in Appendix 12.1 for each of the representative views described above. Cumulative effects are illustrated in the fourth version of each view and show the Proposed Development in combination with the Permitted Development and future indicative Masterplan development of two further data storage facilities. These developments are shown outline only, with the Permitted Development, Proposed Development, and indicative future developments outlined in green, red and yellow respectively.

Figures 1.1.4 and 1.2.4 include the profiles of cumulative developments in outline format. These developments are substantially screened by the motorway landscaping. Cumulative landscape and visual effects are ***not significant*** and ***neutral***.

Figure 1.3.4 includes the profiles of cumulative developments in outline format, and indicates these will be prominent on the skyline beyond the houses, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.4.3 includes the profiles of cumulative developments in outline format, and indicates these will be prominent on the skyline beyond the houses, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.5.4 includes the profiles of cumulative developments in outline format, and indicates these will also be screened by the established boundary landscaping, and cumulative landscape and visual effects will be ***not significant*** and ***neutral***.

Figure 1.6.4 includes the profiles of cumulative developments in outline format, and indicates these will be partially visible beyond the Permitted Development and the main avenue landscaping, giving rise to cumulative landscape and visual effects are ***slight/moderate*** and ***negative***.

Figure 1.7.4 includes the profiles of cumulative developments in outline format, and indicates these will be screened by the Proposed Development, with no additional landscape and visual effects.

Figure 1.8.3 includes the profiles of cumulative developments in outline format, and shows the upper parts of the southern elevations being visible beyond the motorway landscaping. It is noted that this view location is not sensitive, and the nature of the view in momentary, and as such, cumulative landscape and visual effects are ***not significant*** and ***negative***.

Figure 1.9.4 includes the profiles of cumulative developments in outline format, and indicate an intensification of development at the outskirts of Drogheda, giving rise to cumulative landscape and visual effects that are ***moderate*** and ***negative***.

Figure 1.10.4 includes the profiles of cumulative developments in outline format, and indicates these will become visible behind the landscaping of the northern site boundary and against the skyline, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.11.4 includes the profiles of cumulative developments in outline format, and indicates an intensification of development in the distance and against the skyline, giving rise to cumulative landscape and visual effects are ***moderate/significant*** and ***negative***.

Figure 1.12.4 includes the profiles of cumulative developments in outline format, and indicates an intensification of development in the distance, but substantially below the skyline and against a backdrop of landscape and built elements, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.13.4, 1.14.4 and 1.15.4 include an outline of the cumulative developments and also illustrate that these developments would be fully screened from these viewpoints and with ***no cumulative landscape and visual effects***.

APPENDIX 12.1

PHOTOMONTAGES

BY BRADY SHIPMAN MARTIN

PHOTOMONTAGES

for

Project No. 6730
Oldbridge 110kV Substation

for

Client: AWN Consulting LImited

Date: 16 September 2020
Document Number: RP03

Brady Shipman Martin
Canal House
Canal Road
Dublin 6

Tel: +353 (0)1 208 1900
Email: mail@bradyshipmanmartin.com

BSM Est. 1968
Brady Shipman Martin.
Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

CONTENTS AMENDMENT RECORD

This report has been issued and amended as follows:

REVISION	DESCRIPTION	DATE	PREPARED BY	CHECKED BY
00	View Location Map and 15 no. of Photomontages	11 September 2020	BP	JK
01	Revision to 15 no. of Photomotnages	16 September 2020	BP	JK

PHOTOMONTAGE TABLE OF CONTENT

Day:	11	16
Month:	09	09
Year:	20	20
FIGURE NUMBER	**REVISION**	
1.0	00	00
1.1.1	00	00
1.1.2	00	01
1.1.3	00	01
1.1.4	00	01
1.2.1	00	00
1.2.2	00	01
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1.5.3	00	01
1.5.4	00	01
1.6.1	00	00
1.6.2	00	01
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1.7.2	00	01
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1.8.1	00	00
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1.8.4	00	01
1.9.1	00	00
1.9.2	00	01
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1.10.3	00	01
1.10.4	00	01

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Month:	09	09
Year:	20	20
FIGURE NUMBER	**REVISION**	
1.11.1	00	00
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1.11.4	00	01
1.12.1	00	00
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1.12.4	00	01
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1.13.2	00	01
1.13.3	00	01
1.13.4	00	01
1.14.1	00	00
1.14.2	00	01
1.14.3	00	01
1.14.4	00	01
1.15.1	00	00
1.15.2	00	01
1.15.3	00	01
1.15.4	00	01

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Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Figure: 1.0 View Location Map

Rev: 00

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.1.1 **Rev: 00**

View 1 from M1 northbound approaching Exit 9 to Drogheda
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

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Figure: 1.1.2 **Rev: 01**

View 1 from M1 northbound approaching Exit 9 to Drogheda
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.1.3 **Rev: 01**

View 1 from M1 northbound approaching Exit 9 to Drogheda
As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.1.4 **Rev: 01**

View 1 from M1 northbound approaching Exit 9 to Drogheda
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.2.1 **Rev: 00**

View 2 from M1 Northbound Exit 9 to Drogheda
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.2.2 **Rev: 01**

View 2 from M1 Northbound Exit 9 to Drogheda
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.2.3 **Rev: 01**

View 2 from M1 Northbound Exit 9 to Drogheda

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
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Figure: 1.2.4 **Rev: 01**

View 2 from M1 Northbound Exit 9 to Drogheda
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.3.1 **Rev: 00**

View 3 from The Green, Tredagh View, Rathmullen
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.3.2 **Rev: 01**

View 3 from The Green, Tredagh View, Rathmullan
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.3.3 **Rev: 01**

View 3 from The Green, Tredagh View, Rathmullan

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.3.4 **Rev: 01**

View 3 from The Green, Tredagh View, Rathmullan
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.4.1 **Rev: 00**

View 4 from Marley's Lane, Rathmullen
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.4.2 **Rev: 01**

View 4 from Marley's Lane, Rathmullan
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.4.3 **Rev: 01**

View 4 from Marley's Lane, Rathmullan

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.4.4 **Rev: 01**

View 4 from Marley's Lane, Rathmullan
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.5.1 **Rev: 00**

View 5 from Cedarfield Close, Rathmullan
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.5.2 **Rev: 01**

View 5 from Cedarfield Close, Rathmullan

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.5.3 **Rev: 01**

View 5 from Cedarfield Close, Rathmullan

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Green - Permitted (not visible from this viewpoint) and Yellow - Cumulative (not visible from this vewpoint)

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.5.4 **Rev: 01**

View 5 from Cedarfield Close, Rathmullan
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.6.1 **Rev: 00**

View 6 from Donore Road at the entrance to Drogheda Retail Park
Baseline, prior to any development

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.6.2 **Rev: 01**

View 6 from Donore Road at the entrance to Drogheda Retail Park
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Red - Proposed (not visible from this viewpoint)

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.6.3 **Rev: 01**

View 6 from Donore Road at the entrance to Drogheda Retail Park
As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.6.4 **Rev: 01**

View 6 from Donore Road at the entrance to Drogheda Retail Park
Cumulative

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.7.1 **Rev: 00**

View 7 from Drogheda Retail Park
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.7.2 **Rev: 01**

View 7 from Drogheda Retail Park
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Red - Proposed (not visible from this viewpoint)

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.7.3 **Rev: 01**

View 7 from Drogheda Retail Park

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Red - Proposed (not visible from this viewpoint) and Yellow - Cumulative (not visible from this vewpoint)

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.7.4 **Rev: 01**

View 7 from Drogheda Retail Park
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.8.1 **Rev: 00**

View 8 from Donore Road over M1
Baseline, prior to any development

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.8.2 **Rev: 01**

View 8 from Donore Road over M1

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Red - Proposed (not visible from this viewpoint)

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.8.3 **Rev: 01**

View 8 from Donore Road over M1

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.8.4 **Rev: 01**

View 8 from Donore Road over M1
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.9.1 **Rev: 00**

View 9 from Donore Graveyard
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.9.2 **Rev: 01**

View 9 from Donore Graveyard

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.9.3 **Rev: 01**

View 9 from Donore Graveyard

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.9.4 **Rev: 01**

View 9 from Donore Graveyard
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.10.1 **Rev: 00**

View 10 from Local Road northwest of the Site
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Green outline represents size and location of Permitted Development not visible from this viewpoint.

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.10.2 **Rev: 01**

View 10 from Local Road northwest of the Site
Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.10.3 **Rev: 01**

View 10 from Local Road northwest of the Site
As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 73.7° / 24mm	< 65.5° / 28mm	< 54.4° / 35mm	< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >	35mm / 54.4° >	28mm / 65.5° >	24mm / 73.7° >

Figure: 1.10.4 **Rev: 01**

View 10 from Local Road northwest of the Site
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.11.1 **Rev: 00**

View 11 from N51 roundabout over M1
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.11.2 **Rev: 01**

View 11 from N51 roundabout over M1

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.11.3 **Rev: 01**

View 11 from N51 roundabout over M1

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.11.4 **Rev: 01**
View 11 from N51 roundabout over M1
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.12.1 **Rev: 00**

View 12 from Cockle Road, Tullyesker
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.12.2 **Rev: 01**

View 12 from Cockle Road, Tullyesker

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Red - Proposed

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.12.3 **Rev: 01**

View 12 from Cockle Road, Tullyesker

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.12.4 **Rev: 01**

View 12 from Cockle Road, Tullyesker
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.13.1 **Rev: 00**

View 13 from Newgrange
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.13.2 **Rev: 01**

View 13 from Newgrange

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.13.3 **Rev: 01**

View 13 from Newgrange

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.13.4 **Rev: 01**

View 13 from Newgrange
Cumulative

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.14.1 **Rev: 00**

View 14 from Knowth
Baseline, prior to any development

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.14.2 **Rev: 01**

View 14 from Knowth

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Green - Permitted (not visible from this viewpoint) and Red - Proposed (not visible from this viewpoint)

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.14.3 **Rev: 01**

View 14 from Knowth

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Est. 1968 Brady Shipman Martin. Built. Environment.

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

Outlines represent size and location of developments: Green - Permitted (not visible from this viewpoint), Red - Proposed (not visible from this viewpoint) and Yellow - Cumulative (not visible from this vewpoint)

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.14.4 **Rev: 01**

View 14 from Knowth
Cumulative

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.15.1 **Rev: 00**

View 15 from Dowth
Baseline, prior to any development

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.15.2 **Rev: 01**

View 15 from Dowth

Showing Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm | < 28.8° / 70mm | ANGLE OF VISION / LENS FOCAL LENGTH | 70mm / 28.8° > | 50mm / 39.6° >

Figure: 1.15.3 **Rev: 01**

View 15 from Dowth

As Proposed, with Permitted Data Storage Facility PA Reg Ref LB/191735

BSM Brady Shipman Martin. Built. Environment. Est. 1968

Project Number:	6730	Document Number:	RP03	Revision:	01
Project Name:	Oldbridge 110kV Substation	Document Title:	PHOTOMONTAGES	Date:	16 September 2020

< 39.6° / 50mm	< 28.8° / 70mm	ANGLE OF VISION / LENS FOCAL LENGTH	70mm / 28.8° >	50mm / 39.6° >

Figure: 1.15.4

Rev: 01

View 15 from Dowth
Cumulative

BSM Brady Shipman Martin. Built. Environment. Est. 1968

13.0 TRAFFIC AND TRANSPORTATION

13.1 Introduction

This Chapter of the EIA Report assesses the likely traffic impacts of the Proposed Development to the road network in vicinity to the site. The contents within this section of the EIA Report provide an overview of the recent planning history relating to the site, as well as a description of the receiving surrounding environment. The characteristics of the proposal in terms of physical infrastructure and the methodology utilised for assessing the development's traffic impacts are also set out within this chapter. A description of the Proposed Development is presented within Chapter 2.

The predicted traffic impact of the proposal are presented for the construction and operational phases, taking into consideration the likely traffic implications of committed developments in the local area. A cumulative traffic impact is also presented taking in consideration the additional impacts of the Indicative Masterplan Development within the site and the Indicative Future Development within the Local area. Remedial or reductive measures required to prevent, reduce or offset any significant adverse effects are presented as part of the assessment.

13.2 Recent Planning History

Overview

A planning application was submitted to Meath County Council (MCC) in December 2019 for the construction of a two-storey data storage facility building (with mezzanine levels at both storeys), a 6 MVA substation (i.e. a unit sub), and associated ancillary development on a site located within the IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath, Planning Reference *MCC ref: LB/191735* (hereafter referred to in this report as the Permitted Development). The Permitted Development comprises a gross floor area (GFA) of 28,573 sq.m to be developed on a 19.46 hectares site. 50 no. car parking spaces and 26 no. sheltered bicycle parking will be provided as part of the Permitted Development to accommodate the staff, contractors, and visitors' parking needs. This development shall be operated by Amazon Data Services Ireland Ltd., and shall be accessed through the IDA Business and Technology Park Access Road via the Donore Road.

Planning permission was granted by MCC on February 2020 for the development of the facilities described above.

Construction of the data storage facility has commenced and is expected to be operational by 2023.

13.3 Site Location and Use

As noted in section 13.2, the subject site is located within the Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. Figure 13.1 below illustrates the extent of the Proposed Development in relation to local road network and Permitted Development under *MCC ref: LB/191735.*

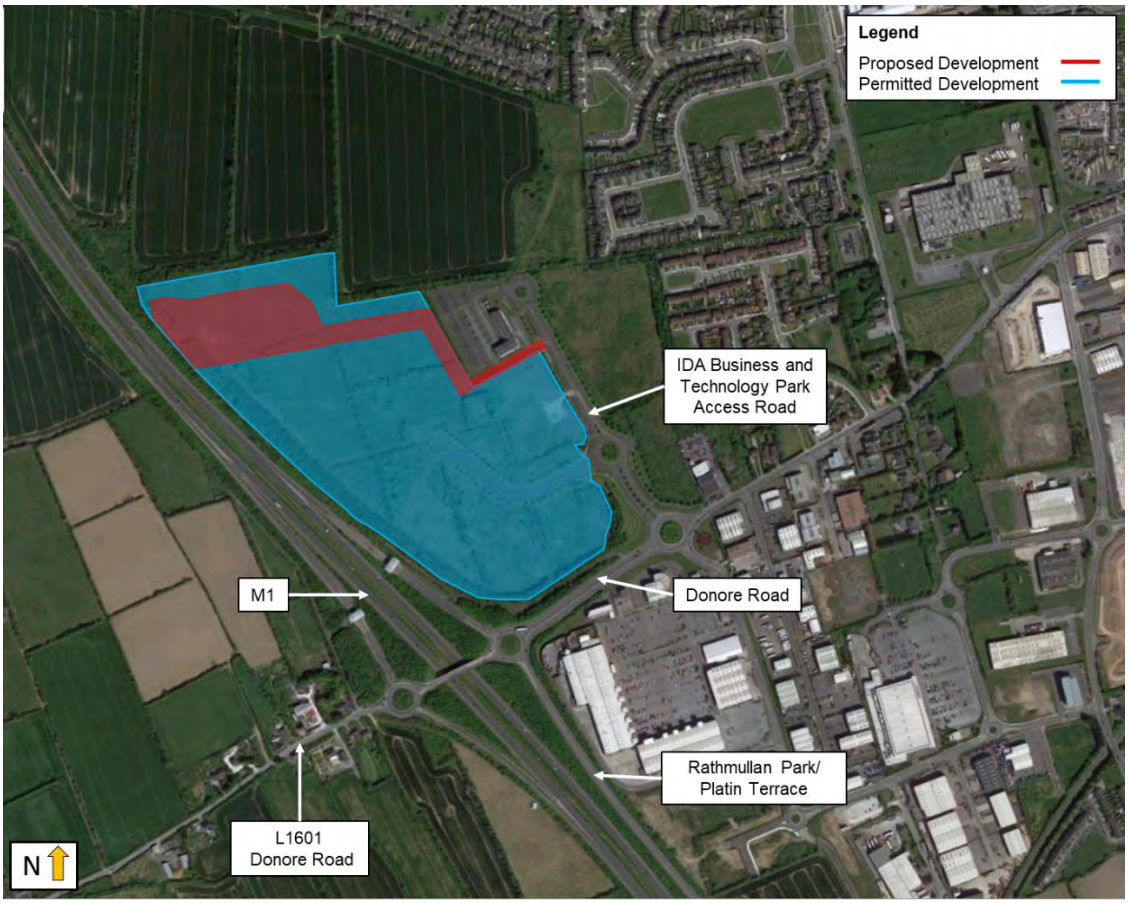

Figure 13.1: Site Location

As shown on Figure 13.1 above, the site is bounded to the east by IDA Business and Technology Park Access Road, to the west by the M1 Motorway, to the north by undeveloped lands, and to the south by an emergency access road and Donore Road.

13.4 Relevant Policy and Planning Documents

This Chapter has been prepared taking the following documents into account:

- *Meath County Development Plan 2013-2019*, Meath County Council;
- *Local Area Plan for South Drogheda & Environs 2010-2015,* Louth County Council;
- *TII Traffic and Transport Assessment Guidelines* (2014), Transport Infrastructure Ireland (TII);
- *Design Manual for Urban Roads and Streets (DMURS) (2019)*, Department of Transport, Tourism and Sport & Department of Environment, Community and Local Government;
- *TII Project Appraisal Guidelines – Unit 5.3: Travel Demand Projections (2016)*, Transport Infrastructure Ireland (TII);
- Planning documents relating to the following planning applications:
    - LB/191735 (Meath Co. Co.): AWN Consulting Limited, two-storey data storage facility building located within Proposed Development lands (Permitted Development as per section 13.2)

- 17918 (Louth Co. Co.): McBreen Environmental 2-storey office development, workshop and maintenance building to facilitate a Lorry Depot- to the east of the Proposed Development;
- 15675 (Louth Co. Co.): Louth & Meath Education & Training Board. Two-storey administrative headquarters development located to the north east of the Proposed Development;
- 19724 (Louth Co. Co.): Maxol Ltd. extension to existing development to provide a new shop with off-licence, 3 restaurants/ cafés and drive through facility located to the east of the Proposed Development;
- 17719 (Louth Co. Co.): Natures Best Ltd. Single storey extension to existing development located to the south east of the Proposed Development;
- 19504 (Louth Co. Co.): Gatevale Ltd car showroom development, Donore Road - to the east of the Proposed Development;
- 1946 (Louth Co. Co.): Becton Dickinson & Company Ltd. Extension to existing manufacturing facility to the east of the Proposed Development;
- 16723 (Louth Co. Co.): Mr Paul Kelly new warehousing/industrial development- to the south east of the Proposed Development

13.5 Traffic Impact Assessment Methodology

13.5.1 Methodology

The methodology used to assess of the Proposed Development traffic impacts is described below:

1. Establishing Baseline Conditions – To assess the Proposed Development's potential traffic impacts, an appreciation of the existing situation first needs to be established. The existing conditions recorded the description of surrounding road network, public transport services, and baseline (do-nothing) traffic volumes;
2. Review of Permitted Development– To assess the cumulative impact of the Proposed Development and Permitted Development on local area, an analysis of the traffic impact assessment for Permitted Development under *MCC ref: LB/191735* was carried out. The results of such assessment were extracted from the documentation prepared in support of this Planning Application. In addition, traffic associated with all other Permitted Developments in vicinity to the site was taken into consideration.
3. Estimation of Proposed Development Traffic Generation– In this section, a detailed estimation of the transport demand that will be generated by the Proposed Development during construction and operation phases was undertaken. The morning and evening peak times were addressed, as well as an estimation of the construction traffic relating to the peak construction phase;
4. Assessment of the Cumulative Traffic Impact – An assessment was undertaken to establish the impact of the Proposed Development in the form of proportional percentage traffic increase through relevant junctions during the operational and construction phases. This part of the methodology uses the traffic generations estimated traffic for Permitted Development, Committed Development,

Indicative Masterplan Development, and Proposed Development , and present a cumulative impact for the delivery of all works.

5. The worst case construction traffic impact is also discussed for the peak construction traffic movements; and
6. Mitigation measures are proposed to offset any impacts that may result from the develoment.

13.5.2 Relevant Junctions

The following three junctions in the vicinity of the site has been taken into consideration for the assessment:

- 4-arm of Donore Road/ off-ramp from/to M1;
- 4-arm of Donore Road / Rathmullan Park/ off-ramp to M1 southbound Roundabout; and
- 4-arm Donore Road/ Drogheda Retail Park Access Road/ IDA Business and Technology Park access Road Roundabout.

13.5.3 Assessment Years

The following assessment years have been taken in consideration for the analysis presented within this Chapter:

- Existing Year (2019-baseline conditions only);
- Opening year (2023- assume Proposed Development full operation); and
- Horizon Year – 15 years after opening (i.e. 2038- assume Proposed Development full operation).

13.6 Receiving Environment

13.6.1 Existing Road Network

IDA Business and Technology Park Access Road

The IDA Business and Technology Access Road is a two-way local road located directly to the east of the subject site. This road intersect with Donore Road to the southeastern end of the Proposed Development site via a 4-arm roundabout, allowing circulation from the local road network into the Business Park.

The first 100 metres of the IDA Business and Technology Access Road (from the Junction with Donore Road) accommodates 2 no. Traffic lanes in each direction. A central island is provided to separate the northbound and southbound traffic movements. Bidirectional off-road cycle lanes are also provided in this section of road, adjacent to the southbound lane.

Approximately 100 metres to the north of the junction with Donore Road another 3-arm roundabout junction is formed with the Proposed Development's site access road. The western arm of this junction provides access to the Proposed Development site.

Donore Road/L1601

Donore Road is a two-way local road which connects the Donore village to the west to R132 George Street to the north east, extending for approximately 5 kilometres. The section of road located to west of the Donore Road/IDA Business and

Technology Park Access Road roundabout provides two traffic lanes in each direction, with a central island separating eastbound and westbound lanes. The section to the east of the Donore Road/IDA Business and Technology Park Access Road roundabout accommodates one lane in each direction. A speed limit of 50km/hr is in operation in the vicinity of the site.

Rathmullan Park/ Platin Terrace

Rathmullan Terrace is a two-way local road located to the southwest of the Proposed Development site. This road forms a roundabout junction with Donore Road ca. 240 metres to the west of the Donore Road/IDA Business and Technology Park Access Road roundabout. Rathmullan Park continues onto Platin Terrace, with no notable change to road carriageway conditions. These two roads provide one traffic lane on each direction and are (combined) approximately 1.25 metres long. A speed limit of 80km/hr is currently in operation. Platin Terrace connects to the R152 and the on-ramp to the southbound lane of the M1

M1/N1

The M1/N1 is a two way motorway which connects Northern Ireland border in Armagh to the north with the M50 to the south. In the vicinity of the site, the M1 provides two traffic lanes in each direction, and has an associated speed limit of 120km/hr.

13.7 Existing Public Transport Services

The site is currently served by both Bus and Rail. Public transport stops for bus services 101X, 163, 901, 901D, and 904 can be found approximately 270 metres to the east of the Donore Road/IDA Business and Technology Park Access Road roundabout (i.e. approximately 550 metres from the Proposed Development site access). Service frequency and routes are as follow:

- Bus Eireann 101X: this route provides services between Wilton Terrace (Dublin) and Dundalk via Dublin Airport and Donore Road. The first and last service depart Dublin City Centre for Dundalk at 06:40am and 23:40, respectively, while departing times from Dundalk for Dublin City Centre occur at 03:30am for the first bus and 20:30 for the last bus. Buses typically operate on 60-minute intervals during the day.
- Bus Eireann 163: this bus provides 2 daily services with the route starting and finishing at Drogheda Bus Station, with the route making a number of stops at tourist points of interest including Brú Na Bóinne Visitor Centre and also stopping on Donore Road. The two services depart Drogheda Bus Station at 11:15 and 14:45;
- Matthews Services 901/901D: these routes provide services between Dublin (Cumberland Street North) and Dundalk, via Donore Road (Drogheda), with the first service departing Dublin for Dundalk at 06:30am and the last bus departing Dublin City Centre at 23:30. The first service departs Dundalk for Dublin City Centre at 05:30am and the last bus departs Dundalk at 21:30. Buses typically operate on 60-minute intervals during the day, with services every 30-mins during peak periods. Reduced hours of service are provided on Saturdays and Sundays.

- Matthews Services 904: this bus route provides 3 no. daily services on each direction between Dundalk and UCD via Donore Road, with the first service departing Dundalk for UCD at 6:00am and the last at 7:00am. The first service departing from UCD for Dundalk occurs at 4:10pm and the last at 6:10pm. One additional service is provided from UCD on Fridays at 1:15pm.
- Rail Services: the nearest railway station to the Proposed Development is Drogheda (MacBride), located circa 3.0 km to the east of the subject site. Services are available from this station to Dundalk and Belfast to the north and to Dublin City Centre, Dun Laoghaire and Bray to the South. The approximate travel time to Dublin City Centre (Dublin Connolly) from this station is 60-minutes. This service operates approximately on up to a 10-minute frequency during peak hours and on a 30-min frequency during off-peak times.

13.8 Existing Traffic Volumes

Data Collection

Due to the ongoing global COVID-19 pandemic and related restrictions implemented by the Irish Government in March 2020, traffic volumes in the road network surrounding the site have significantly decreased. As a result, it has not been possible to undertake traffic surveys to obtain updated traffic volumes at the time of the assessment. In light of this, and in order to determine baseline traffic conditions and provide a basis from which the future development's traffic impact can be analysed, historic data has been utilised for the assessment. The day of the week and the month the traffic surveys were carried out are the preferred day and month as per standard practices. A Tuesday, Wednesday and Thursday are considered neutral days of the weeks to carry out traffic surveys and October is considered as a neutral month as it is not impacted by summer holidays or the Christmas period.

The classified Junction turning counts undertaken as part of the Traffic Impact Assessment (TIA) for Permitted Development (data storage facility) under planning registry *MCC Reg. Ref: LB/191735* has been utilised for the assessment. The surveys were undertaken on Tuesday 17th October 2019 over a period of 12-hours (07:00-19:00hrs) by Nationwide Data Collection (NDC), on behalf of Clifton Scannell Emerson Associates. Figure 13.2 below illustrates the location of the surveys.

Figure 13.2: Traffic Survey Locations

As shown on Figure 13.2 above, the surveys were undertaken at the following junctions:

- J1: 4-arm of Donore Road/ off-ramp from/to M1
- J2: 4-arm of Donore Road / Rathmullan Park/ off-ramp to M1 southbound Roundabout; and
- J3: 4-arm Donore Road/ Drogheda Retail Park Access Road/ IDA Business and Technology Park access Road Roundabout

Survey Results

Following the analysis of the surveys, network peak hours were determined to occur between 08:30-09:29hrs for the AM peak, and 17:00-17:59hrs for the PM peak. Table 13.1 below presents the total traffic recorded at the relevant junctions during the peak hours described above. Traffic figures presented in the following table are in Passenger Car Units (PCUs) with the following factors assumed: medium goods vehicles 1.5, bus 2.0, and HGV 2.3. Source: *TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016).*

Time Period	Total Junction Traffic Movements (PCUs)		
	J1	J2	J3
AM Peak (08:30-09:29hrs)	679	1566	1350
PM Peak (17:00-17:59hrs)	1029	2119	1726

Table 13.1: Traffic Survey Results; Source: TIA for Proposed Datacentre MCC Reg. Ref: LB/191735, Clifton Scannell Emerson Associates, 2019.

13.9 Description of Proposed Development

13.9.1 Proposed Development Overview

The Proposed Development entails the construction of a 110kV Gas Insulated Switchgear (GIS) Substation, 4 no. transformer bays, a client control building, 49kVa electrical supply, 2 number dropdown 110kV transmission lines comprising, two new masts (c. 16 meters in height), underground 110kV transmission lines, and all associated and ancillary developments to be located on a 3.07 hectares of land within Drogheda IDA Business and Technology Park, Donore Road, Drogheda, Co. Meath. Figure 13.3,Figure 13.4 and Figure 13.5 below illustrates the overall layout of the Proposed Development.

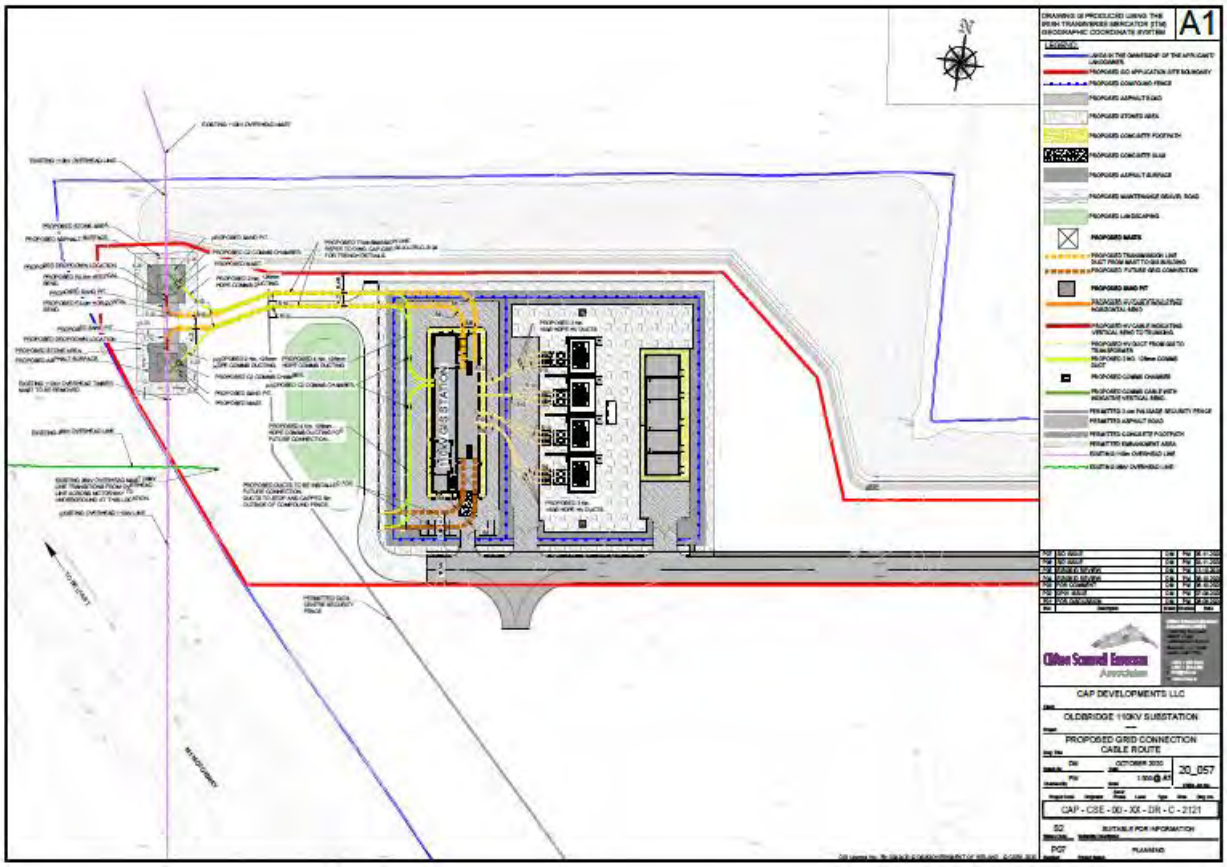

Figure 13.3: Proposed Position of Drop down Masts & Transmission Route. (Drawing Courtesy of Clifton Scannell Emerson Associates, September 2020)

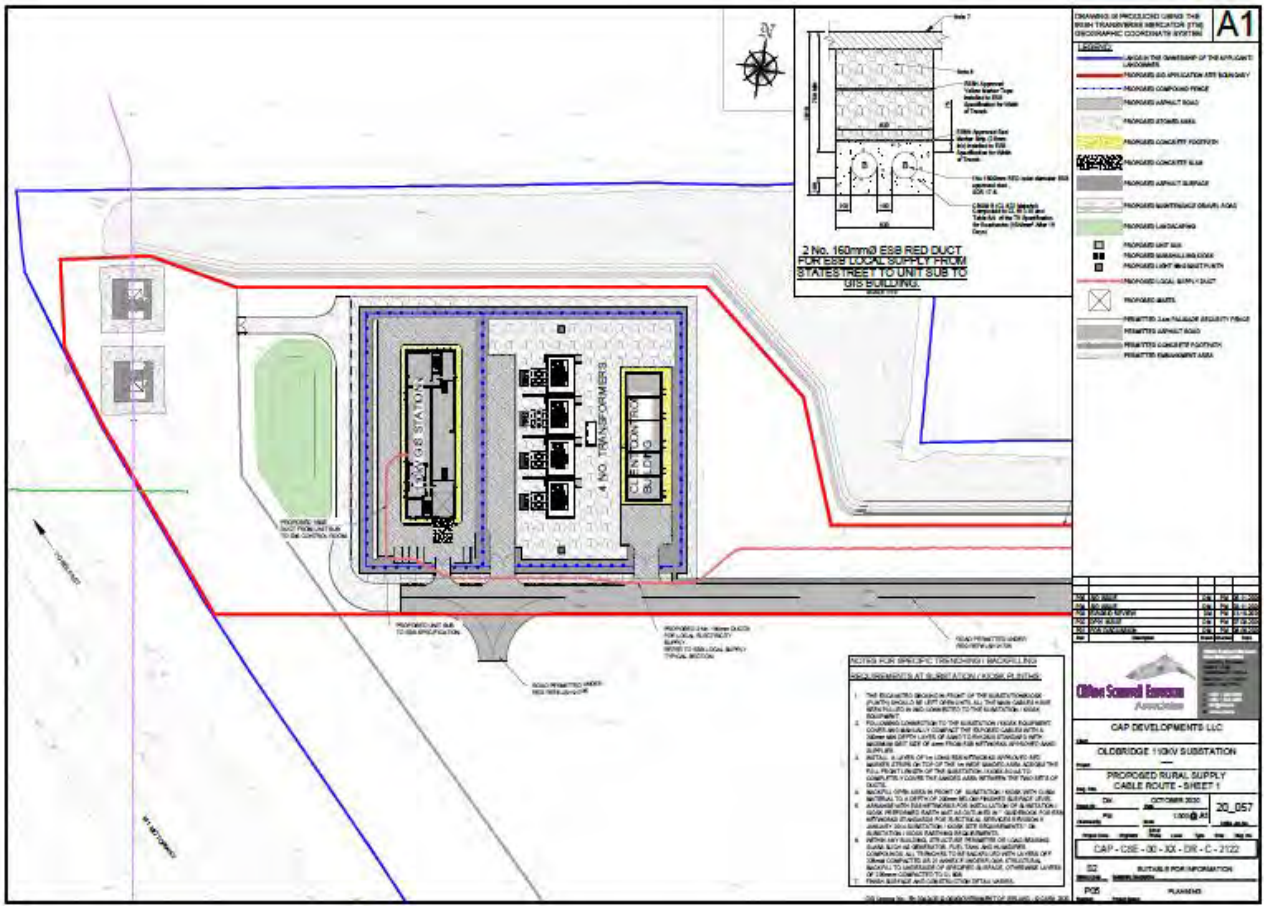

Figure 13.4: Proposed Rural Supply Route – Sheet 1 (Drawing Courtesy of Clifton Scannell Emerson Associates, September 2020)

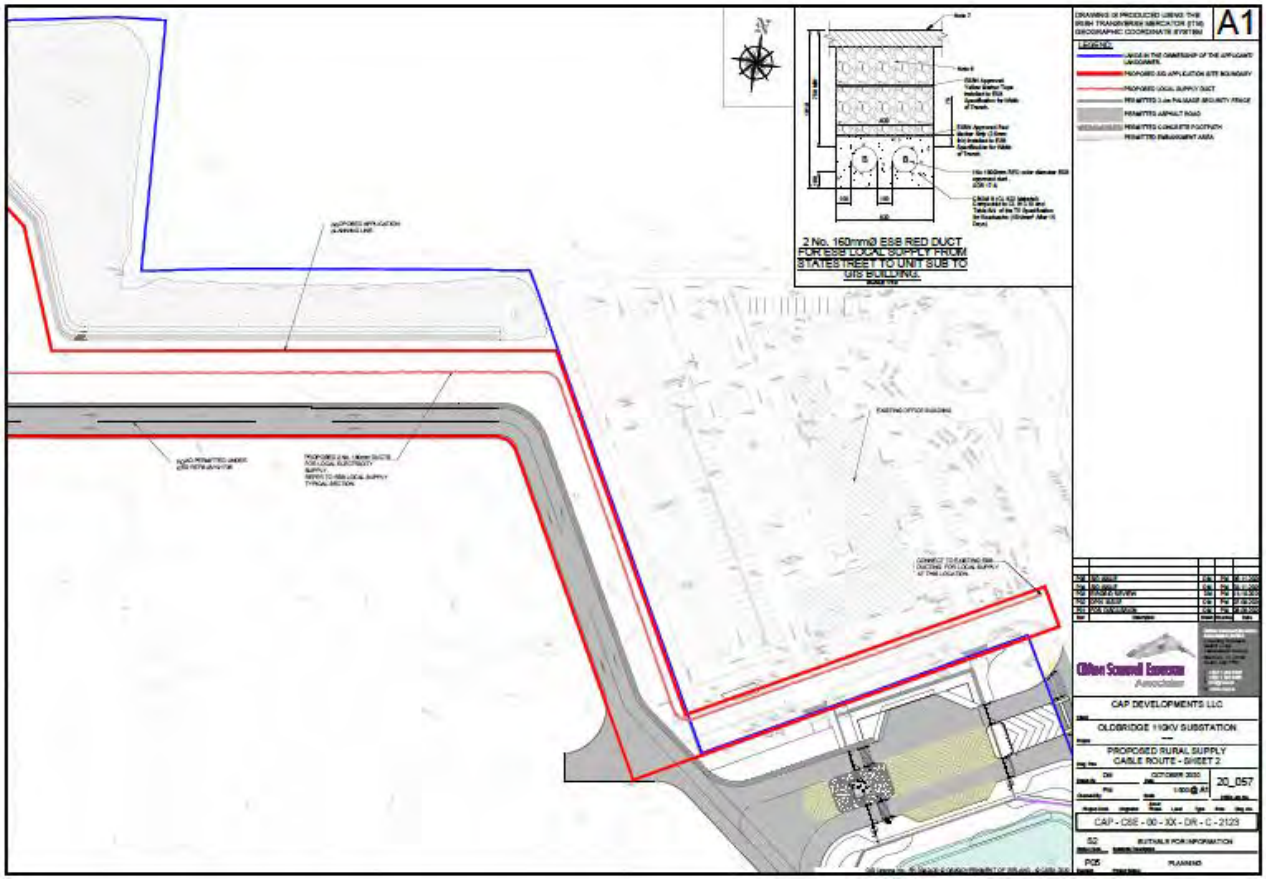

Figure 13.5: Proposed Rural Supply Route – Sheet 2 (Drawing Courtesy of Clifton Scannell Emerson Associates, September 2020)

The design of the two underground 110kV transmission line will comprise a double 110kV circuit installed underground in high-density polyethylene (HDPE) ducting. The 110kV cables will be a standard XLPE (cross-linked polyethylene) copper cable. All works shall be undertaken off road.

13.9.2 Internal Road Layout

The internal layout of the site has been designed to give clear, legible routes for pedestrians, cyclists and motorists to enter and exit the development.

13.9.3 External Road Layout

The design of the proposed main site access junctions with IDA Business and Technology Park Access Road (undertaken as part of the permitted Data Centre Development *MCC Reg. Ref: LB/191735*) has been done such that adequate sightlines are provided for all road users.

13.10 Proposed Development Traffic Generation

13.10.1 Construction Phase

The Proposed Development construction will begin during Q2 2021 and will take place over a period of approximately 12 months. In general, the impact of the construction period associated with the Proposed Development would be **short-term** in nature. Construction traffic would consist of the following:

- Private vehicles belonging to site construction staff;
- Private vehicles belonging to site security staff;
- Occasional Private vehicles belonging to professional staff (i.e. design team, utility companies); and
- Excavation plant and dumper trucks used for site development works.

Construction traffic has been estimated based on contractor experience of similar substation works and underground cable installation works, taking into account the scale of the Substation and the length of underground cables to be installed, also noting that the underground cable routes are off-road. The following construction data has been used to estimate peak daily construction traffic associated with the Proposed Development:

- Peak construction staff (peak staff levels during Civil Works): 30;
- Peak cars (LV) entering/exiting site per day: 30; and
- Peak HGVs (HV) entering/exiting site per day: 10;

Table 13.2 below sets out the estimate traffic generation associated with the Proposed Development during the construction phase. For the purpose of this assessment, it has been assumed that 50% of the LV traffic will arrive and depart from the site during critical time periods, and up to 2 no. HGV vehicles will access/egress the site every hour.

Time Period	Arrivals		Departures		Total PCUs[1]
	LV	HV	LV	HV	
AM Peak (07:30-08:29)	15	2	0	2	24
PM Peak (16:30-17:29)	0	2	15	2	24
Total 12-hours	**30**	**10**	**30**	**10**	**106**

Table 13.2: Proposed Development Traffic Generation - Construction Phase (Peak Construction Phase)

As shown on Table 13.2, during the peak construction stage, a total of 24 no. PCUs trips associated with the Proposed Development are expected to occurs during both critical periods. HGV trips are expected to arrive and leave during the same hour.

13.10.2 Operational Phase

The construction of the Proposed Development is expected to be completed by Q2 2022, however this is expected to be fully operational on 2023 when the permitted Datacentre under *MCC Reg. Ref: LB/191735* is finalised. The proposed development does not require any full time staff to operate it on a daily basis. However, maintenance of the substation will be required, including a routine weekly

[1] *PCU Factors: medium goods vehicles 1.5, bus 2.0, and HGV 2.3. Source: TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016).*

inspection, and a more comprehensive inspection once per year. The weekly inspection will take a maximum of 8 hours on a single day and will be conducted by up to 2 ESB staff.

In addition to the weekly inspections, more comprehensive maintenance works will take place annually on each cubicle. This will require up to 4 ESB staff to conduct testing at the substation over a maximum period of 15 days (120 hours). This represents the worst case scenario for traffic generation related to the Proposed Development during the operational phase. Table 13.3 below sets out the estimated traffic generation during the worst case scenario. For the purpose of this assessment, it has been assumed that 50% of the traffic will arrive and depart during critical time periods.

Time Period	Arrivals		Departures		Total PCUs[2]
	LV	HV	LV	HV	
AM Peak (07:30-08:29)	2	0	0	0	2
PM Peak (16:30-17:29)	0	0	2	0	2
Total 12-hours	**4**	**0**	**4**	**0**	**8**

Table 13.3: Proposed Development Traffic Generation - Operational Phase (Worst Case Scenario)

As seen in Table 13.3, up to 2 no. vehicles trips are estimated to be generated by the Proposed Development during critical time periods. These vehicles movements shall be expected only during the worst case scenario which shall happen once per year.

13.11 Proposed Development Traffic Modal Split

For the purpose of this report, a worst-case scenario has been assumed for traffic generation by assuming all trips to the site are by private car or HGV.

13.12 Proposed Development Traffic Distribution

For the purpose of this assessment, the following turning proportions have been assumed for the construction traffic associated with the Proposed Development:

- 60% of the traffic shall access/egress via Donore Road east arm;
- 15% of the traffic shall access/ egress via Drogheda Retail Park Access Road; and
- 25% of the traffic shall access via Donore Road West arm.
- Traffic Distribution at junctions 1 and junction 2 shall follow existing traffic patterns.

These turning proportions follow the traffic patterns estimated for the permitted development under *MCC Reg. Ref: LB/191735* (See Section 13.2). The turning

[2] *PCU Factors: medium goods vehicles 1.5, bus 2.0, and HGV 2.3. Source: TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016).*

proportions at the relevant junctions for the construction traffic are illustrated in Figure 13.6 and Figure 13.7 below for arrival and departures, respectively.

Figure 13.6: Proposed Development Arrival Turning Proportions -Construction phase

Figure 13.7: Proposed Development Departures Turning Proportions--Construction phase

Due to the low volume of operational traffic estimated for the Proposal, all traffic generation for this phase has been assumed to access the site via the Donore Road east arm.

13.13 Committed Developments

13.13.1 Overview

A Traffic Impact Assessment (TIA) was undertaken by Clifton Scannell Emerson Associates to evaluate the Permitted Development's traffic implications on the road network in the vicinity of the site. The assessment determined the expected traffic impact during the operational and construction phases of the Permitted Development. A description of the methodology and the traffic impact results of the assessment is presented within the remainder of this Section.

13.13.2 Permitted Development TIA Methodology

The assessment methodology for the TIA first established the traffic conditions of the road network surrounding the site via the 12-hour classified junction turning counts described in section 13.8 of this Report. TII growth factors were used to establish future year traffic forecasts, allowing to estimate expected traffic patterns for the year 2023, which has been assumed to be the 'Year of Opening', in addition to Year of Opening +15 (2038).

The development's trip generation was estimated based on the expected staff contractors, and visitors numbers. An ARCADY model was developed for the relevant roundabout junctions presented within section 13.8. This model assessed

the junctions' performance without and with the development in place, using existing traffic volumes (See section 13.8), and forecasted traffic volumes.

13.13.3 Permitted Development Traffic Generation

Construction Phase Traffic Generation

The assessment undertaken for the Permitted Development estimated the construction traffic utilising data obtained from a similar data storage facility that used a similar construction methodology. Table 13.3 below summarises the estimated construction traffic generation for the Permitted Development.

Time Period	Arrivals		Departures		Total PCUs[3]
	LV	HV	LV	HV	
AM Peak (07:30-08:29)	80	14	16	7	**144**
PM Peak (16:30-17:29)	16	7	80	14	**144**
Total	**96**	**21**	**96**	**21**	**288**

Table 13.3: Permitted Development Traffic Generation (Construction Phase); TIA for Proposed Datacentre MCC Reg. Ref: LB/191735, Clifton Scannell Emerson Associates, 2019.

As shown on Table 13.3 above, in the construction phase the Permitted Development is expected to generate a total of 144 no. PCU's during the AM peak and PM peak periods. The total traffic generation for the

Operational Phase Traffic Generation

A maximum of 50 staff (to include external staff, maintenance staff and visitors) were assumed to occupy the Permitted Development at any given time during the operational stage.

Up to 4 no. security staff will be on the site at any given time, with weekday shifts extending from 08:00-17:00hrs, and 17:00-08:00hrs. Taking a conservative approach, it is assumed that 4 no. security employees shall access the development and 4 no. security employees shall exit the development during the AM and PM peak hours, i.e. 8 trips during the AM peak and 8 trips during the PM peak.

Up to 31 day-shift employees and 3 night-shift employees shall operate the data storage facility over a 24-hour period, with shift hours to extending from 07:00-19:00hrs (dayshift) and 19:00-07:00hrs (night shift). Given that traffic peak hours were recorded between 08:30-09:29hrs and between 17:00-18:00hrs, it was assumed no staff operating the data storage facility building will enter or exit the site during the critical traffic peak time periods.

In addition to security, shift and general office staff, up to 15 employees will be visitors and maintenance staff (e.g. staff conducting routine inspections, maintenance checks, attending meetings, etc.). They will most likely arrive and depart from the site within an hour or two, early in the day. Taking a conservative

[3] *PCU Factors: medium goods vehicles 1.5, bus 2.0, and HGV 2.3. Source: TII, Project Appraisal Guidelines for National Roads Unit 5.2 (October 2016).*

approach, it is assumed that 100% of these employees will arrive during the AM peak (i.e. 15 staff), and 30% will depart during the AM peak (i.e. 5 staff).

A maximum of 1 HGV will deliver to the site per day, which has been assumed to enter and exit the site during the AM peak hour.

It is assumed that all staff trips will be made by car. Table 13.4 below, sets out the total traffic, i.e. Light Vehicles (LV) and Heavy Vehicles (HV), estimated to transit from/to the Permitted facilities during critical time periods once operational.

	Total Junction Traffic Movements (PCUs)			
	AM Peak (08:30-09:29hrs)		PM Peak (17:00-17:59hrs)	
	In	Out	In	Out
Security Staff	4	4	4	4
General Office Staff	0	0	0	0
Visitors & Maintenance	15	5	0	0
Deliveries (HGV)	1	1	0	0
Total	**20**	**10**	**4**	**4**

Table 13.4: Permitted Development Traffic Generation (Operational Phase); Source TIA for Proposed Datacentre MCC Reg. Ref: LB/191735, Clifton Scannell Emerson Associates, 2019.

As it can be seen on Table 13.4, the Permitted Development shall generate a total of 20 no. arrivals and 10 no. departures during the AM peak. The trip generation for the PM peak is estimated to be 4 no. arrivals and 4 no. departures from/to the development.

13.13.4 Permitted Development Traffic Distribution

The traffic generation associated with the permitted development will follow the traffic distribution presented within Figure 13.5 and Figure 13.6 (see Section 13.12).

13.13.5 Other Committed Development in the Local Area

In addition to the Permitted Development discussed above, 8 no. committed development were identified within the local area at the time of this assessment. These developments have a granted planning permission however are no yet delivered. Table 13.5 below, sets out the traffic associated with the these developments that will transit through the junctions under study during the critical time periods, i.e. 08:30-09:29hr and 17:00-17:59hrs.

Time Period	Arrivals	Departures	Total Trips
AM Peak (08:30-09:29)	68	58	**126**
PM Peak (17:00-17:59)	42	64	**106**

Table 13.5:Traffic Generation for Other committed Developments on Local Area. TIA for Proposed Datacentre MCC Reg. Ref: LB/191735, Clifton Scannell Emerson Associates, 2019.

The traffic generation figures presented above have been obtained from the traffic impact assessments prepared to support the permitted applications. A list of relevant

planning documents with Planning Reference Number is presented within section 13.4.

13.14 Indicative Future Development

13.14.1 Indicative Masterplan Development

In addition to the permitted development under planning *MCC Reg. Ref: LB/191735* discussed within preceding section 13.13, the applicant has undertaken a preliminary master-planning exercise for the remainder of the subject site (See Figure 13.1). This masterplan indicates the potential for future development of two further data storage facilities (Building 2 and 3) to the north of the Permitted Development. The potential traffic associated with these facilities is presented within the remainder of this section.

Construction Phase Traffic Generation

Taking a conservative approach, it is assumed that construction of Building 2 will commence during Q2 2023 when Permitted Development (Building 1) and Proposed Development are already operational. It has been assumed that this additional data storage facilities (if built) will be of the same scale as the permitted development. Construction traffic has been estimated using data obtained from a similar data storage facility development, that used a similar construction methodology to the current development. The following construction data has been used to estimate peak daily construction traffic (for Building 2 Only):

- Average construction staff for one data storage facility: 275;
- Conservative estimate of Construction Staff for fit out of final data halls:170;
- Peak construction staff for one data storage facility: 400;
- Average cars/ day for one data storage facility: 165;
- Peak cars/day for one data storage facility: (400/275)*165= 240
- Peak cars/day for Building 2, and final fit out of Building 1,: ((400+170)/275)*165= 342;
- Peak HGVs/day for one data storage facility: 110;
- Peak HGVs/day for Building 2, and final fit out of Building 1: 110*((400+170)/400)= 157;
- Peak LGVs/ day for one data storage facility: 30; and
- Peak LGVs/day for Building 2, and final fit out of Building 1: 30*((400+170)/400)=43.

Should Building 2 be developed, it will be built on a phased basis to meet customer demand. Our assessment has been done in accordance with the following estimated timelines:

- Indicative Masterplan Development - Building 2:
    - Construction Start – 2023
    - Commence Operation of first data storage room –2024

- Full Operation –2026

- Indicative Masterplan Development - Building 3:
  - Construction Start – 2026
  - Commence Operation of first data storage room – 2028
  - Full Operation – 2029

Based on the assumed timeline presented above, the construction of this Indicative Masterplan Development will not overlap with the construction activities of current proposed development.

Operational Phase Traffic Generation

Should the Indicative Masterplan Development (Buildings 2 and 3) be developed, it is assumed that there would be a similar staff requirement and associated vehicular trip generation than the one estimated for Permitted Development (Building 1).Table 13.6 below sets out the assumed trip generation for Buildings 2 and 3 during the operational phase:

	Total Junction Traffic Movements (PCUs)			
	AM Peak (08:30-09:29hrs)		PM Peak (17:00-17:59hrs)	
	In	Out	In	Out
Security Staff	8	8	8	8
General Office Staff	0	0	0	0
Visitors & Maintenance	30	10	0	0
Deliveries (HGV)	2	2	0	0
Total	**40**	**20**	**8**	**8**

Table 13.6 : Traffic Generation for Indicative Future Data Storage Facilities (Building 2 and 3)

As it can be seen on Table 13.6, the Indicative Masterplan Development shall generate a total of 40 no. arrivals and 20 no. departures during the AM peak. The trip generation for the PM peak is estimated to be 8 no. arrivals and 8 no. departures from/to the development. Based on the timelines presented in preceding section, this traffic will be generated by 2026 for Building 2 and 2029 for Building 3.

13.14.2 Future Development in Lands to the North of Subject Site

In addition to the Indicative Masterplan Development presented above, a planning application was approved in 2000 to facilitate further development of the lands located directly to the north of the subject site through road infrastructure upgrades (ref: 001642). This road infrastructure is now in place. The extensive development envisaged for this section of land has not been developed to date, however the potential traffic generation for this have been taken into consideration as part of the cumulative traffic impact assessment.

The trip generation associated with future development likely to occupy this land will be estimated using TRICS database. TRICS database requires information on the Gross Floor Area (GFA) of future development and the future developments land use. The GFA of the potential future development on these lands was estimated by measuring the area of land available for development (32Ha). The estimated GFA of potential future development for the site is 91,200m2.

The land use associated with these lands was stated in the Meath County Council Development Plan, 2013-2019 –Drogheda Southern Environs Land Use Zoning Objectives Map as follows:

E1 'to facilitate opportunities for high technology and major campus style office based employment within high quality and accessible locations.'

Based on the above description, it is assumed that 50% of the potential future developments GFA will comprise Business Park development and 50% of the potential future developments GFA will comprise Industrial Estate development. Table 13.7 below shows the estimated trip generation during the peak hours i.e. 08:30-09:30 and 17:00-18:00) for Business Park development of 45,600m2 and Industrial Development of 45,600m2.

	AM Peak		PM Peak	
	Arrivals	Departures	Arrivals	Departures
Business Park	489	92	65	470
Industrial Estate	82	49	30	82
Total	**571**	**141**	**95**	**552**

Table 13.6 : Traffic Generation for Indicative Future Development within Lands to the North of Subject Site.

As shown on Table 13.6, the Future Development to be delivered within the Lands to the north of the site has the potential to generate up to 571 no. arrivals and 141 no. departures during the AM Peak. During the PM peak, this development can generate up to 95 no. arrivals and 552 no. departures.

13.15 Traffic Impact Analysis

13.15.1 Assessment Years and Time Period

In order to establish the traffic impact of the Proposed Development on the local road network, it is first necessary to understand the without development or 'do-nothing' scenario. As recommended by *TII's TTA Guidelines*, three assessment years are considered, namely: base year (2019), year of opening (YoO) which is assumed to be 2023; and a horizon year (YoO+15), i.e. 2038. The assessment will focus on assessing the Proposed Development traffic impact during the critical time periods on the local road network as identified from the traffic survey summarised in Section 13.8 of this Report, i.e. the AM peak hour (08:30-09:29hrs) and the PM peak hour (17:00-17:59hrs). First, the traffic impact of the development is estimated taking into consideration the traffic associated with permitted development under *MCC Reg. Ref: LB/191735* and the traffic associated with all committed development in the

local area (See section 13.13). Lastly, a cumulative traffic impact is presented taking into consideration the traffic associated with the Indicative Masterplan Development, and the Indicative Future Development in the area in the vicinity of the Proposed Development site (See section 13.14).

13.15.2 Background Traffic Growth Forecasting

Existing traffic flows on the surrounding road network, as determined via the traffic survey discusses in section 13.8, have been adjusted through application of appropriate growth factors to determine YoO (2023) and YoO+15 (2038) traffic flows. For this assessment, growth factors were determined from the Transport Infrastructure Ireland (TII) *Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, May 2019*. Information within these guidelines is provided for Meath County from 2016-2030 and from 2030-2040 for low, central and high sensitivity growth scenarios. Central growth factors were assumed for this assessment to determine future year background traffic flows on the surrounding road network. These factors are set out in Table 13.7, which follows.

Years	Annual Growth Factor - LV	Annual Growth Factor – HV
2016-2030	1.0173	1.0365
2030-2040	1.0070	1.0186

Table 13.7: TII Growth Factors – Central- Meath County

The TII central growth factors in the preceding Table 13.7, has been used to provides an overview of do-nothing base year, YoO and YoO+15 total traffic volumes (in PCUs) for the identified AM and PM peak hours. The results of this analysis are presented in the following Table 13.8, which follows.

Junction No.	Time Period	Total Forecasted Junction Traffic Movements (PCUs)		
		Base Year* 2019	YoO 2023	YoO+15 2038
J1	**AM Peak**	679	735	909
	PM Peak	1,029	1,106	1,335
J2	**AM Peak**	1,566	1,698	2,111
	PM Peak	2,119	2,283	2,777
J3	**AM Peak**	1350	1,457	1,807
	PM Peak	1726	1,854	2,234

Table 13. 8: Existing and Forecast Background Approach Flow Traffic on Relevant Junction.
**As per Table 13.1*

13.16 Forecast Background Traffic with Committed Developments

In order to establish the potential impacts of the proposed development, the traffic associated with the Permitted Development and all committed development in the local area, as discussed in section 13.13, was added to the forecasted background traffic flows. These traffic figures represent a 'do-minimum' scenario without the Propose Development in place. Table 13.9 below, sets out these traffic flows.

Junction No.	Time Period	Total Junction Traffic Movements (PCUs)	
		YoO 2023	YoO+15 2038
J1	AM Peak	755	929
	PM Peak	1,121	1,350
J2	AM Peak	1,737	2,150
	PM Peak	2,312	2,806
J3	AM Peak	1,613	1,963
	PM Peak	1,968	2,348

Table 13.9: Forecasted Traffic Flows with Permitted and Committed Developments

The traffic flows within table 13.9 above has been compared to the forecast background traffic in Table 13.8 to establish the proportional percentage increase through the junctions without the Proposed Development in place. Table 13.10, which follows, sets out the total additional traffic and proportional increase through the junctions in the 'do-minimum' scenario.

Junction no.	Additional Traffic Through Junctions Operational Phase			
	AM Peak	Percentage Increase	PM Peak	Percentage Increase
J1	20	2.72%	15	1.36%
J2	39	2.30%	29	1.27%
J3	156	10.70%	114	6.15%

Table 13.9: Proportional Traffic Increase Through Relevant Junctions With Committed Developments Only

13.17 Potential Impacts Of The Development

Operational Phase

The Proposed Development traffic generation was added to the 'do-minimum' forecasted traffic flows in presented in table 13.9 above to establish the traffic volumes with the Proposed Development in place. This represents a 'do-something' scenario, which includes the future background traffic, the 'do-minimum' traffic, and traffic associated with Proposed Development. Table 13.10 below, sets out the figures estimated with Proposed Development in place.

Junction No.	Time Period	Total Junction Traffic Movements (PCUs)	
		YoO 2023	YoO+15 2038
J1	AM Peak	755	929
	PM Peak	1,121	1,350
J2	AM Peak	1,737	2,150
	PM Peak	2,312	2,806
J3	AM Peak	1,615	1,965
	PM Peak	1,970	2,350

Table 13.10 Forecasted Traffic Flows with Proposed Development In Place

As shown on Table 13.10 above, traffic flows for the 'do-minimum' and do-something scenario are very similar, as only 2 no. of additional vehicle movements are expected to be generated by the Proposed Development during the critical time periods (see section 13.10.2). The additional 2 no. trips have been assumed to access the development via the Donore Road east arm, therefore, they have been added only to junction no. 3 (Donore Road/ Drogheda Retail Park Access Road/ IDA Business and Technology Park access Road Roundabout).

13.17.1 Proportional Traffic Increase with Proposed Development

Based on the traffic generation and distribution discussed in preceding sections of this Chapter, the traffic impact of the Proposed Development has been estimated. The total traffic percentage increase at relevant junctions with committed and proposed developments, is presented in Table 13.11, which follows.

Junction no.	Additional Traffic Through Junctions Operational Phase			
	AM Peak	Percentage Increase	Additional Traffic PM Peak	Percentage Increase
J1	20	2.72%	15	1.36%
J2	39	2.30%	29	1.27%
J3	158	10.84%	116	6.26%

Table 13.11: Proportional Traffic Increase at Relevant Junctions with Permitted and Proposed Developments

As shown on table 13.11 above, due to the low number of vehicles trips associated with Proposed Development, the traffic percentage increase through the junctions shall remain similar as the one presented within Table 13.9. With the Proposed Development in place, traffic movements through junction no. 3 during the AM peak shall increase up 10.84%, which compares to 10.70% with the Committed Developments only. During the PM peak, traffic through this junction shall increase by up to 6.26%, which compares to 6.15% in the 'do-minimum'. The percentage increase through other junctions under study shall remain the same as with Permitted Developments, as the Proposed Development traffic shall only transit through junction no. 3.

This demonstrates that the traffic impact in the operational phase of the Proposed Development is ***long-term***, ***neutral*** and ***imperceptible***. The proportional traffic increase through the relevant junctions with the Proposed Development are significantly below the thresholds stated in the *TII Guidelines for Traffic and Transport Assessments, 2014* for junction analysis.

13.18 Cumulative Traffic Impact with Indicative Future Development

13.18.1 Construction Phase

As noted on section 13.10.1, construction activities for the proposed development should take place between Q2 2021 and Q2 2022. During this period, the construction of Permitted Development (Building 1) will still be ongoing, as it is expected to finalised in 2023, and will overlap with the construction of the Proposed Development .

The construction of the Indicative Masterplan Development (Building 2 and 3) is expected to begin (if built) during 2023. At this time, the construction of the Proposed Development and Building 1 (permitted development) will be already finalised. Therefore, the construction activities associated with Indicative Masterplan Development will not overlap with the construction of the proposed development

In light of the timelines presented above, the potential impacts of the proposed development during the construction phase have been estimated taking into consideration the construction traffic associated with the permitted development under *MCC Reg. Ref: LB/191735* (Building 1) only.

A noted in section 13.10.1, during the construction peak period the Proposed Development shall generate up to 20 no. HGV movements per day, of which 4 no. movements shall occurred during each peak period i.e 4 no. in AM peak and 4 no. PM peak (including arrival and departure). In addition to that, 60 no. LV one-way trips associated with staff commuting patterns shall access the site throughout the day, of which, 15 no. trips are expected during the AM and 15 no. trips are expected during the PM peak. These figures have been added to the construction traffic associated with the Permitted Development (Building 1) to obtain impact in the road network in the vicinity of the site. Table 13.12 below sets out the proportional traffic increase through the network at the peak of construction activities, comparing the traffic impacts 'with the Permitted Development only' to the traffic impact 'with the Proposed Development included'.

Junction No.	Construction Phase with Permitted Development Only				Construction Phase with Permitted and Proposed Developments			
	AM Peak	Percentage Increase	PM Peak	% Increase	AM Peak	Percentage Increase	PM Peak	% Increase
J1	16	2.36%	21	2.04%	19	2.75%	25	2.39%
J2	36	2.30%	36	1.70%	42	2.69%	42	1.98%
J3	144	10.67%	144	8.34%	168	12.46%	168	9.75%

Table 13.12: Proportional Traffic Increase at Relevant Junctions During the Construction Phase.

As it can be seen in Table 13.11 above, the impacts of the traffic associated with the construction of Proposed Development are minimal. When comparing both scenarios, an increase is seen at junction no. 3 (Donore Road/ Drogheda Retail Park Access Road/ IDA Business and Technology Park access Road Roundabout) from 10.67% to 12.46%. This traffic increase has been estimated in relation to existing traffic conditions (2019 Traffic Volumes) as shown in Table 13.1. The remaining junctions on the network shall also experience a slight increase, however this is expected to be **not significant** and **short-term**.

Given the short term nature of the peak construction phase, the overall impact of the construction phase involving both developments is considered **not significant** and shall not affect the performance of the junctions under study.

13.18.2 Operational Phase

A cumulative traffic impact has been obtained taking into consideration the Proposed Development , the Permitted Development (building 1), all committed development in

the local area, the Indicative Masterplan Development (Building 2, Building 3), and the Future Development in lands to the north. The traffic flows obtained from the background forecast presented in Table 13.8, have been used a base to determine cumulative traffic impacts of all developments during the operational phase.

Base on the timelines established in sections 13.13 and 13.14, the Permitted Development and all committed development in the local area will be operational by 2023. Therefore the traffic associated with these have been added to both assessment years (2023 and 2038). On the other hand, the traffic associated with Indicative Masterplan Development will not be generated until a further date i.e. 2026 and 2029. Due to this, the traffic generation for this development has been added only to the horizon year i.e. 2038. Table 13.13 below sets out the forecasted traffic figures with all committed developments, Proposed Development, Indicative Masterplan Development, and Future Development in lands to the north in place.

Junction No.	Time Period	Total Junction Traffic Movements (PCUs)	
		YoO 2023	YoO+15 2038
J1	AM Peak	761	1,022
	PM Peak	1,122	1,451
J2	AM Peak	1,752	2,358
	PM Peak	2,312	2,972
J3	AM Peak	1,675	2,797
	PM Peak	1,970	3,013

Table 13.13: Forecast Traffic Flows at Relevant Junctions with all Committed, Proposed Development, Indicative Masterplan Development, and Future Development in Lands to the North.

The proportional percentage traffic increase through the relevant junctions with all developments in place have been estimated for both assessment years and is presented in Table 13.14, below. The cumulative impact has taken into consideration all committed development, Permitted Development, Proposed Development, Indicative Masterplan Development, and Future Developments in Lands to the North.

Junction No.	Time Period	Total Junction Traffic Movements (PCUs)	
		YoO 2023	YoO+15 2038
J1	AM Peak	2.72%	12.41%
	PM Peak	1.36%	8.64%
J2	AM Peak	2.30%	11.70%
	PM Peak	1.27%	7.01%
J3	AM Peak	10.84%	54.89%
	PM Peak	6.26%	34.96%

Table 13.14: Proportional Traffic Increase at Relevant junctions with all Developments in Place

As shown in table 13.14 above, on 2023 traffic flows through junction no. 3 shall increase by up to 10.84% in the AM and 6.26% in the PM. Due to the large scale of the Future Indicative Development in the lands to the north, a higher proportional increase is expected for 2038 during both assessment periods. As noted on section

13.1013.10.2, during the worst case scenario the Proposed Development will only add 2 no. vehicles to the network, which represents a small fraction of the traffic estimated for future years with all other committed and Indicative Masterplan Development in place. Therefore, the proportional traffic increase associated with the Proposed Development is minimal.

This demonstrates that the traffic impact in the operational phase of the Proposed Development is ***long-term***, ***neutral*** and ***imperceptible***. The proportional traffic increase through the relevant junctions associated with the Proposed Development are significantly below the thresholds stated in the *TII Guidelines for Traffic and Transport Assessments, 2014* for junction analysis.

13.19 Remedial And Mitigation Measures

13.19.1 Construction Phase

The following measures will be put in place during the construction works (as outlined in the CEMP) to ensure the effective traffic management during this period:

- The contractor will be required to provide wheel cleaning facilities, and regular cleaning of the main access road;
- Temporary car parking facilities for the construction workforce will be provided within the site and the surface of the car park will be prepared and finished to a standard sufficient to avoid mud spillage onto adjoining roads;
- Monitoring and control of construction traffic will be ongoing during construction works. Construction traffic will minimise movements during peak hours.
- Construction traffic routes shall be use strategically by construction vehicles to minimise traffic impact to surrounding properties. Detailed description of the mitigation measures to be implemented during the construction phase are outlined within the Construction and Environmental Management Plan (CEMP) prepared by Clifton Scannell Emerson Associates in support of the Planning Application. The CEMP is provided within the planning pack as a separate document.

13.19.2 Operational Phase

The potential traffic impact associated with the Proposed Development was found to be **long-term**, **neutral** and **imperceptible**. The traffic impact estimated for this are significantly below the thresholds stated in the TII Guidelines for *Traffic and Transport Assessments, 2014* for junction analysis. Therefore, no junction modifications are recommended on the public road to facilitate the Proposed Development.

13.20 Predicted Impacts Of The Development

Mitigation measures discussed in preceding section 13.19 will be put in place to offset any potential traffic impacts associated with the development. Therefore, the predicted impact of the development will be ***short-term***, ***negative*** and ***not significant*** for the construction phase, and ***long-term, neutral*** and ***imperceptible*** for the operational phase.

13.21 Residual Impacts

The residual traffic impacts of the development will be **neutral** and **imperceptible**. The operational traffic impact assessment discussed within section 13.18 takes cumulative impacts into account.

13.22 Parking

Car Parking Provision

5 No. carparking spaces are proposed as part of the GIS Building Compound for Eirgrid and ESB maintenance staff only. No additional car parking spaces are proposed as part of the Client Control Building Compound Area and all maintenance personnel attempting to service the Client Control Building Compound Area shall be accommodated within the car parking spaces provided with Permitted Development under *MCC ref: LB/191735.*

Cycle Parking provision

No additional cycle parking spaces are proposed as part of the Proposed Development as all maintenance personnel attempting to service the Proposed Development shall access the site via Light Vehicles (LV).

13.23 Environmental Impact

As stated above, the Proposed Development will not generate a significant volume of additional vehicular traffic during construction or operational phases. The level of traffic increase is not likely to have any adverse transport-related environmental effects in terms of noise, air quality, vibrations, etc. The impact of the construction period will be ***short-term*** and ***not significant*** in nature.

13.24 Pedestrian Facilities

110kV GIS Substation and 4 Transformers

The proposed 110kV GIS substation and 4 no. transformer developments include internal footpaths providing safe passage for pedestrians between internal buildings. The internal footpaths shall connect to pedestrian facilities in the vicinity of the Proposed Development.

110kV and 49kVA Cable Installations

No access will be required by pedestrians to these underground cables following completion of the works, apart from 2 ESB staff, who may walk sections of the two routes while carrying out testing of the infrastructure, typically once every 3 years. Due to this, no pedestrian facilities are proposed along the routes of the 110kV and 49kVA cable installations.

13.25 Road Safety

Data from the Road Safety Authority (RSA) collision database was used to assess the safety performance characteristics of the local road network. The database contains information on all reported collisions by severity of injury incurred (i.e. fatal, serious or minor) and by year the collision occurred. The following Figure 13.8

illustrates all collisions recorded on the road network surrounding the site during the 12-year period from 2005 to 2016 inclusive.

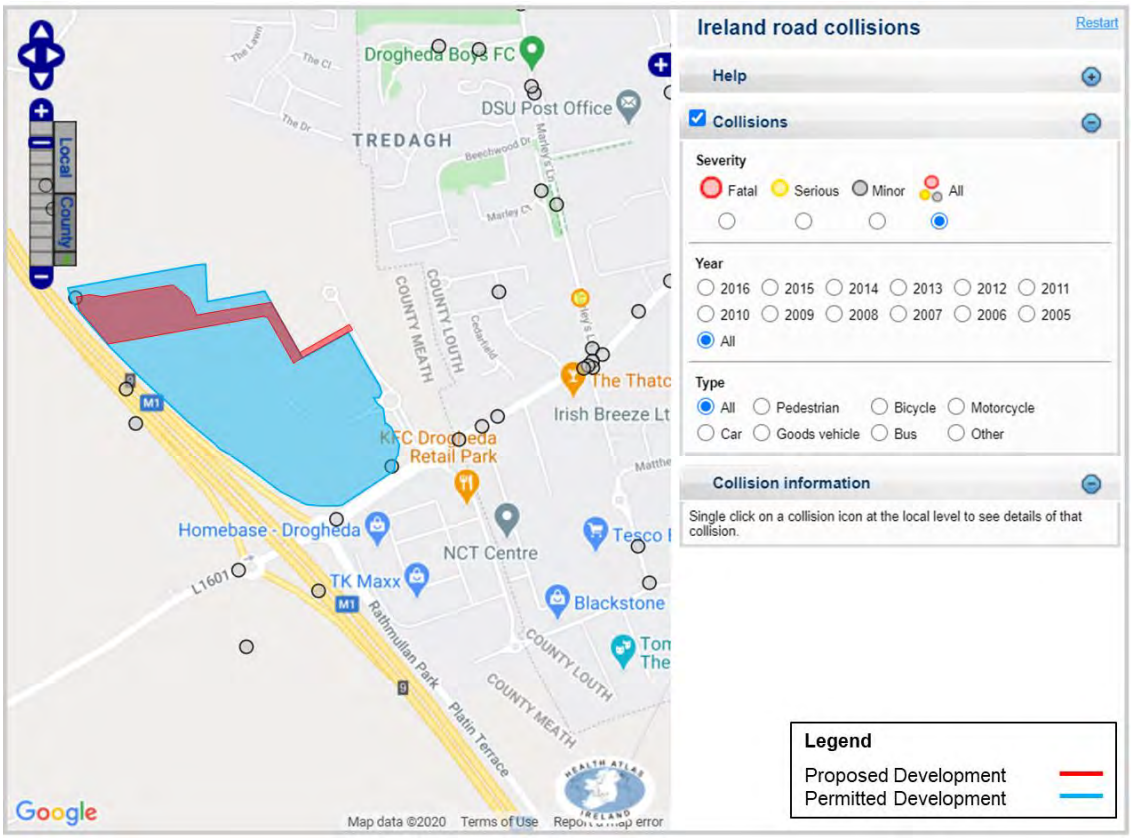

Figure 13.8: RSA Collision Map

As can be seen in Figure 13.8, several minor collisions have been registered on the road network in the vicinity of the site during the 12-year assessment period. A cluster of minor accidents is observed on Donore Road/Marley's Lane junction to the east of the site. Additional minor collisions were registered along the M1 and on the approach to the Donore Road/ Drogheda Retail Park Access Road/ IDA Business and Technology Park access Road Roundabout.

Even though the collisions presented above have occurred in the vicinity of the subject site, the available data indicates that there are no location-specific road safety concerns of relevance to the Proposed Development. Figure 13.9 below charts the trends in collision between 2005-2016 in the vicinity of the site.

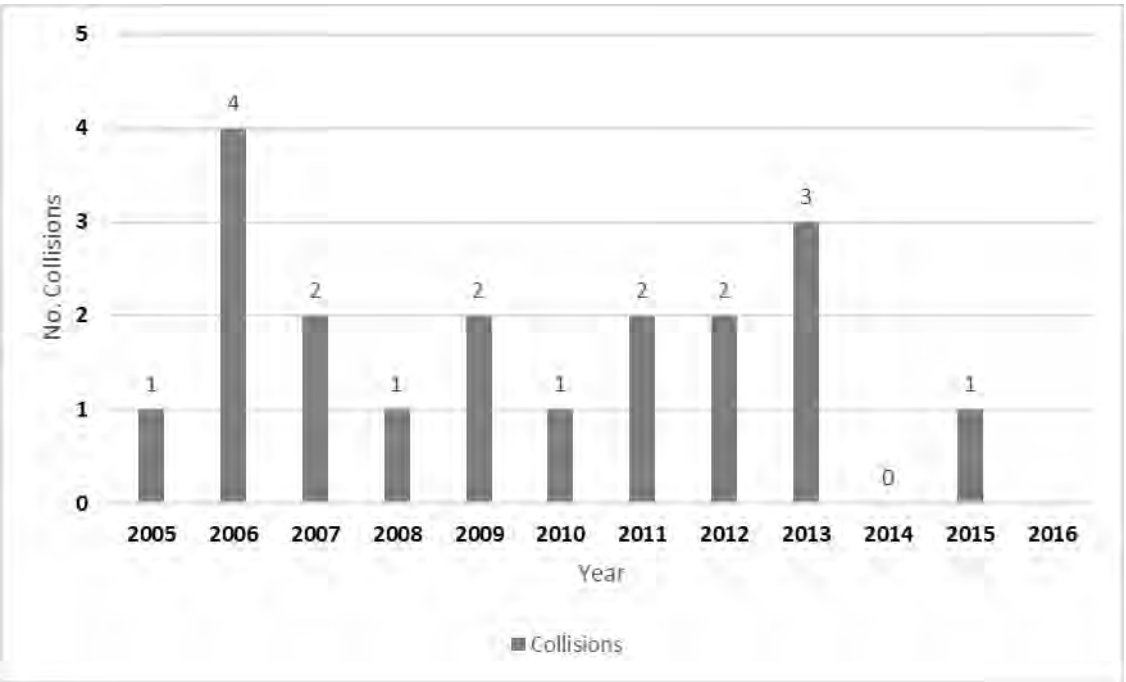

Figure 13.9: Collision Statistics Trends in the Vicinity of Subject Site

Appendix A – Traffic Survey Results

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	A to B - Sliproad onto M1(NB) to Overbridge							Veh. Total	A to C - Sliproad onto M1(NB) to Sliproad Off M1(NB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	A to D - Sliproad onto M1(NB) to L1601							Veh. Total	A to A - Sliproad onto M1(NB) to Sliproad onto M1(NB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	B to C - Overbridge to Sliproad Off M1(NB)							Veh. Total	B to D - Overbridge to L1601							Veh. Total	Time	B to A - Overbridge to Sliproad onto M1(NB)							Veh. Total	B to B - Overbridge to Overbridge							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	11	3	0	0	0	0	0	14	07:00	12	2	2	3	0	0	0	19	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	4	2	1	0	2	0	1	10	07:15	11	1	1	1	0	0	0	14	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	16	5	1	1	1	0	0	24	07:30	20	4	1	3	0	0	0	28	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	13	10	2	0	0	0	0	25	07:45	35	2	2	2	0	0	0	41	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	44	20	4	1	3	0	1	73	Hour	78	9	6	9	0	0	0	102	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	8	6	0	0	1	0	0	15	08:00	40	4	1	4	1	0	0	50	1	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	8	3	0	0	1	0	0	12	08:15	42	8	1	2	2	0	0	55	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	21	1	0	0	1	0	0	23	08:30	37	4	1	4	0	0	0	46	1	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	27	3	2	1	0	0	0	33	08:45	31	4	1	3	0	0	0	39	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	64	13	2	1	3	0	0	83	Hour	150	20	4	13	3	0	0	190	2	0	0	0	0	0	0	2
09:00	0	0	0	0	0	0	0	0	19	4	1	0	2	0	0	26	09:00	37	8	1	4	1	0	0	51	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	18	4	2	1	1	0	0	26	09:15	32	5	3	1	0	0	0	41	1	0	0	0	0	0	0	1
09:30	0	0	0	0	0	0	0	0	17	1	0	0	0	0	0	18	09:30	24	5	6	4	0	0	0	39	0	0	1	0	0	0	0	1
09:45	0	0	0	0	0	0	0	0	11	2	0	0	0	0	0	13	09:45	24	3	2	2	0	0	0	31	5	0	0	0	0	0	0	5
Hour	0	0	0	0	0	0	0	0	65	11	3	1	3	0	0	83	Hour	117	21	12	11	1	0	0	162	6	0	1	0	0	0	0	7
10:00	0	0	0	0	0	0	0	0	16	5	0	0	0	0	0	21	10:00	22	5	2	1	1	0	0	31	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	15	3	0	1	0	0	0	19	10:15	23	4	8	3	1	0	0	39	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	10	0	1	0	0	0	0	11	10:30	23	3	2	3	1	0	0	32	0	1	0	0	0	0	0	1
10:45	0	0	0	0	0	0	0	0	20	1	0	1	1	0	0	23	10:45	37	2	4	0	0	0	0	43	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	61	9	1	2	1	0	0	74	Hour	105	14	16	7	3	0	0	145	0	1	0	0	0	0	0	1
11:00	0	0	0	0	0	0	0	0	26	4	0	0	0	0	0	30	11:00	25	7	4	7	1	0	0	44	2	0	0	0	0	0	0	2
11:15	0	0	0	0	0	0	0	0	23	5	0	3	1	0	0	32	11:15	18	7	2	5	1	0	0	33	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	18	5	1	5	0	1	0	30	11:30	15	3	1	5	0	0	0	24	1	0	0	0	0	0	0	1
11:45	0	0	0	0	0	0	0	0	18	3	1	0	0	0	0	22	11:45	14	7	5	3	0	0	0	29	2	0	0	0	0	0	0	2
Hour	0	0	0	0	0	0	0	0	85	17	2	8	1	1	0	114	Hour	72	24	12	20	2	0	0	130	5	0	0	0	0	0	0	5
12:00	0	0	0	0	0	0	0	0	27	3	0	0	0	0	0	30	12:00	19	4	2	4	1	0	0	30	1	1	0	0	0	0	0	2
12:15	0	0	0	0	0	0	0	0	33	5	1	0	0	1	1	41	12:15	31	3	1	9	0	0	0	44	1	0	0	0	0	0	0	1
12:30	0	0	0	0	0	0	0	0	32	0	1	0	0	0	0	33	12:30	24	3	2	7	0	0	0	36	0	1	0	0	0	0	0	1
12:45	0	0	0	0	0	0	0	0	27	3	0	0	0	0	0	30	12:45	24	8	3	5	0	0	0	40	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	119	11	2	0	0	1	1	134	Hour	98	18	8	25	1	0	0	150	2	2	0	0	0	0	0	4
13:00	0	0	0	0	0	0	0	0	32	3	0	0	0	0	1	36	13:00	21	8	2	3	1	0	0	35	2	0	0	0	0	0	0	2
13:15	0	0	0	0	0	0	0	0	22	4	0	0	0	0	0	26	13:15	30	3	2	2	1	0	0	38	2	0	0	0	0	0	0	2
13:30	0	0	0	0	0	0	0	0	29	1	1	0	0	0	0	31	13:30	34	3	2	2	0	0	0	41	1	0	0	0	0	0	0	1
13:45	0	0	0	0	0	0	0	0	28	4	0	0	1	0	0	33	13:45	32	6	2	4	0	0	0	44	2	0	0	0	0	0	0	2
Hour	0	0	0	0	0	0	0	0	111	12	1	0	1	0	1	126	Hour	117	20	8	11	2	0	0	158	7	0	0	0	0	0	0	7
14:00	0	0	0	0	0	0	0	0	18	4	0	0	0	0	0	22	14:00	24	5	3	4	1	0	0	37	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	14	1	0	0	1	0	0	16	14:15	26	5	2	4	1	0	0	38	0	0	0	0	1	0	0	1
14:30	0	0	0	0	0	0	0	0	33	2	0	0	0	0	0	35	14:30	25	3	1	0	1	0	0	30	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	24	5	1	0	2	0	0	32	14:45	24	5	2	7	1	0	0	39	2	0	0	0	1	0	0	3
Hour	0	0	0	0	0	0	0	0	89	12	1	0	3	0	0	105	Hour	99	18	8	15	4	0	0	144	2	0	0	1	1	0	0	4
15:00	0	0	0	0	0	0	0	0	22	3	0	0	1	0	0	26	15:00	36	6	1	4	0	0	0	47	2	0	0	0	0	0	0	2
15:15	0	0	0	0	0	0	0	0	25	2	0	2	0	1	0	30	15:15	35	7	3	5	0	0	0	50	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	29	5	0	0	0	0	0	34	15:30	39	12	1	5	1	0	0	58	1	0	0	0	0	0	0	1
15:45	0	0	0	0	0	0	0	0	25	4	0	0	1	0	0	30	15:45	37	8	1	4	0	0	0	50	1	0	0	0	0	0	0	1
Hour	0	0	0	0	0	0	0	0	101	14	0	2	2	1	0	120	Hour	147	33	6	18	1	0	0	205	4	0	0	0	0	0	0	4
16:00	0	0	0	0	0	0	0	0	30	3	1	2	2	1	0	39	16:00	59	13	1	5	2	0	0	80	1	0	0	0	0	0	0	1
16:15	0	0	0	0	0	0	0	0	27	3	0	0	0	0	0	30	16:15	62	18	3	3	0	0	0	86	2	0	0	0	0	0	0	2
16:30	0	0	0	0	0	0	0	0	26	4	0	0	2	0	0	32	16:30	81	27	1	3	0	1	0	113	2	0	0	0	0	0	0	2
16:45	0	0	0	0	0	0	0	0	36	9	1	1	0	0	0	47	16:45	86	29	2	3	0	0	0	120	3	0	0	0	0	0	0	3
Hour	0	0	0	0	0	0	0	0	119	19	2	3	4	1	0	148	Hour	288	87	7	14	2	1	0	399	8	0	0	0	0	0	0	8
17:00	0	0	0	0	0	0	0	0	50	7	0	1	0	0	0	58	17:00	124	25	2	4	0	0	0	155	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	33	4	0	0	0	0	0	37	17:15	95	17	1	1	1	0	0	115	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	50	6	0	1	0	0	0	57	17:30	110	17	2	0	0	0	0	129	1	0	0	0	0	0	0	1
17:45	0	0	0	0	0	0	0	0	49	3	0	0	1	1	0	54	17:45	102	16	2	0	0	0	0	120	2	0	0	0	0	0	0	2
Hour	0	0	0	0	0	0	0	0	182	20	0	2	1	1	0	206	Hour	431	75	7	5	1	0	0	519	3	0	0	0	0	0	0	3
18:00	0	0	0	0	0	0	0	0	36	4	0	0	0	0	0	40	18:00	97	8	2	1	1	0	0	109	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	35	4	0	0	0	0	0	39	18:15	73	16	1	0	0	0	0	90	1	0	0	0	0	0	0	1
18:30	0	0	0	0	0	0	0	0	30	1	0	0	0	0	0	31	18:30	72	5	1	0	0	0	0	78	1	0	0	0	0	0	0	1
18:45	0	0	0	0	0	0	0	0	21	3	1	0	0	0	0	25	18:45	50	9	0	1	2	0	0	62	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	122	12	1	0	0	0	0	135	Hour	292	38	4	2	3	0	0	339	2	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	1162	170	19	20	22	5	3	1401	Total	1994	377	98	150	23	1	0	2643	41	3	1	1	1	0	0	47

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	C to D - Sliproad Off M1(NB) to L1601							Veh. Total	C to A - Sliproad Off M1(NB) to Sliproad onto M1(NB)							Veh. Total	Time	C to B - Sliproad Off M1(NB) to Overbridge							Veh. Total	C to C - Sliproad Off M1(NB) to Sliproad Off M1(NB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	07:00	6	0	0	1	1	0	0	8	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	07:15	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
07:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	07:30	6	1	2	0	1	0	0	10	0	0	0	0	0	0	0	0
07:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	07:45	6	2	1	0	1	0	0	10	0	0	0	0	0	0	0	0
Hour	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	Hour	21	4	3	1	3	0	0	32	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	08:00	6	1	2	0	0	0	0	9	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	08:15	14	1	0	0	1	0	0	16	0	0	0	0	0	0	0	0
08:30	3	0	0	0	0	0	0	3	1	0	0	0	0	0	0	1	08:30	12	2	1	0	0	0	0	15	0	0	0	0	0	0	0	0
08:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	08:45	18	2	2	0	2	0	0	24	0	0	0	0	0	0	0	0
Hour	5	0	0	0	0	0	0	5	1	0	0	0	0	0	0	1	Hour	50	6	5	0	3	0	0	64	0	0	0	0	0	0	0	0
09:00	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	09:00	13	3	1	2	0	0	0	19	0	0	0	0	0	0	0	0
09:15	4	1	0	0	0	0	0	5	1	0	0	0	0	0	0	1	09:15	15	5	0	0	2	0	0	22	0	0	0	0	0	0	0	0
09:30	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	09:30	9	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0
09:45	3	0	0	0	1	0	0	4	0	0	0	0	0	0	0	0	09:45	10	1	0	0	0	0	0	11	0	0	0	0	0	0	0	0
Hour	10	2	0	0	1	0	0	13	1	0	0	0	0	0	0	1	Hour	47	10	1	2	2	0	0	62	0	0	0	0	0	0	0	0
10:00	1	1	0	0	1	0	0	3	0	0	0	0	0	0	0	0	10:00	9	1	2	1	0	0	0	13	0	0	0	0	0	0	0	0
10:15	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	10:15	9	2	1	2	2	0	0	16	0	0	0	0	0	0	0	0
10:30	3	0	0	0	0	0	0	3	0	0	0	1	0	0	0	1	10:30	9	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:45	6	2	1	4	2	0	0	15	0	0	0	0	0	0	0	0
Hour	5	1	0	0	1	0	0	7	1	0	0	1	0	0	0	2	Hour	33	6	4	7	4	0	0	54	0	0	0	0	0	0	0	0
11:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	11:00	6	3	0	0	1	0	0	10	0	0	0	0	0	0	0	0
11:15	2	0	1	0	0	0	0	3	0	0	0	0	0	0	0	0	11:15	9	2	3	0	1	0	0	15	0	0	0	0	0	0	0	0
11:30	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	11:30	8	1	1	1	0	0	0	11	0	0	0	0	0	0	0	0
11:45	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	11:45	6	3	0	1	1	0	0	11	0	0	0	0	0	0	0	0
Hour	13	0	1	0	0	0	0	14	0	0	0	0	0	0	0	0	Hour	29	9	4	2	3	0	0	47	0	0	0	0	0	0	0	0
12:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	12:00	7	1	1	2	1	0	0	12	0	0	0	0	0	0	0	0
12:15	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	12:15	11	1	0	1	0	0	0	13	0	0	0	0	0	0	0	0
12:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	12:30	13	3	2	1	0	0	0	19	0	0	0	0	0	0	0	0
12:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	12:45	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
Hour	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	Hour	35	6	3	4	1	0	0	49	0	0	0	0	0	0	0	0
13:00	2	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	13:00	8	1	0	0	2	0	0	11	0	0	0	0	0	0	0	0
13:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	13:15	11	1	0	1	0	0	0	13	0	0	0	0	0	0	0	0
13:30	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	13:30	13	1	1	0	0	0	0	15	0	0	0	0	0	0	0	0
13:45	4	0	1	0	0	0	0	5	0	0	0	0	0	0	0	0	13:45	10	0	1	0	0	0	0	11	0	0	0	0	0	0	0	0
Hour	8	0	1	1	1	0	0	11	0	0	0	0	0	0	0	0	Hour	42	3	2	1	2	0	0	50	0	0	0	0	0	0	0	0
14:00	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	14:00	12	2	0	0	1	0	0	15	0	0	0	0	0	0	0	0
14:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	14:15	11	3	0	2	1	0	0	17	0	0	0	0	0	0	0	0
14:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	14:30	10	1	0	0	0	0	0	11	0	0	0	0	0	0	0	0
14:45	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	14:45	6	2	1	0	0	0	0	9	0	0	0	0	0	0	0	0
Hour	7	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0	Hour	39	8	1	2	2	0	0	52	0	0	0	0	0	0	0	0
15:00	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	15:00	17	2	2	2	0	0	0	23	0	0	0	0	0	0	0	0
15:15	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	15:15	9	0	0	2	2	0	0	13	0	0	0	0	0	0	0	0
15:30	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	15:30	17	4	0	0	0	0	0	21	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:45	21	3	0	1	1	0	0	26	0	0	0	0	0	0	0	0
Hour	4	1	0	0	0	0	0	5	1	0	0	0	0	0	0	1	Hour	64	9	2	5	3	0	0	83	0	0	0	0	0	0	0	0
16:00	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	16:00	21	1	0	0	1	0	0	23	0	0	0	0	0	0	0	0
16:15	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	16:15	15	2	3	0	2	0	0	22	0	0	0	0	0	0	0	0
16:30	3	1	0	0	0	0	0	4	0	1	0	0	0	0	0	1	16:30	22	1	1	1	1	0	0	26	0	0	0	0	0	0	0	0
16:45	3	2	0	0	0	0	0	5	1	0	0	0	0	0	0	1	16:45	18	2	0	1	1	0	0	22	0	0	0	0	0	0	0	0
Hour	9	5	0	0	0	0	0	14	1	1	0	0	0	0	0	2	Hour	76	6	4	2	5	0	0	93	0	0	0	0	0	0	0	0
17:00	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	17:00	23	2	0	0	1	0	0	26	0	0	0	0	0	0	0	0
17:15	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	17:15	19	3	1	0	2	0	0	25	0	0	0	0	0	0	0	0
17:30	4	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0	17:30	24	4	0	1	1	0	0	30	0	0	0	0	0	0	0	0
17:45	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	17:45	34	2	0	0	1	0	0	37	0	0	0	0	0	0	0	0
Hour	13	2	0	0	0	0	0	15	2	0	0	0	0	0	0	2	Hour	100	11	1	1	5	0	0	118	0	0	0	0	0	0	0	0
18:00	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	18:00	19	0	0	0	5	0	0	24	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18:15	27	4	0	0	3	0	0	34	0	0	0	0	0	0	0	0
18:30	3	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0	18:30	18	2	1	0	3	0	0	24	0	0	0	0	0	0	0	0
18:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	18:45	18	1	0	0	1	0	0	20	0	0	0	0	0	0	0	0
Hour	6	1	0	0	0	1	0	8	0	0	0	0	0	0	0	0	Hour	82	7	1	0	12	0	0	102	0	0	0	0	0	0	0	0
Total	94	13	2	1	3	1	0	114	7	1	0	1	0	0	0	9	Total	618	85	31	27	45	0	0	806	0	0	0	0	0	0	0	0

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	D to A - L1601 to Sliproad onto M1(NB)							Veh. Total	D to B - L1601 to Overbridge							Veh. Total	Time	D to C - L1601 to Sliproad Off M1(NB)						Veh. Total	D to D - L1601 to L1601							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	17	1	0	0	0	0	0	18	07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	2	2	0	0	0	0	0	4	17	1	1	0	0	1	0	20	07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	1	0	0	1	0	0	0	2	25	1	0	0	5	0	0	31	07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	1	0	1	0	0	0	0	2	32	3	0	2	1	0	1	39	07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	4	2	1	1	0	0	0	8	91	6	1	2	6	1	1	108	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	30	4	0	0	0	0	0	34	08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	1	0	0	0	0	0	0	1	46	4	0	1	0	0	0	51	08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	6	0	0	2	0	0	0	8	67	5	1	0	1	1	0	75	08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	3	0	0	0	0	0	0	3	68	6	1	0	0	0	0	75	08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	10	0	0	2	0	0	0	12	211	19	2	1	1	1	0	235	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00	2	1	0	1	0	0	0	4	35	6	1	0	0	0	1	43	09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	2	0	2	0	0	0	0	4	39	3	0	1	0	0	0	43	09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	1	0	0	0	0	0	0	1	24	1	0	0	1	0	0	26	09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	25	2	2	1	0	0	0	30	09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	5	1	2	1	0	0	0	9	123	12	3	2	1	0	1	142	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0	0	24	3	1	0	0	0	0	28	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	0	1	0	1	0	0	0	2	20	1	0	1	0	0	0	22	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	2	0	0	0	0	0	0	2	19	0	0	0	0	0	0	19	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	3	0	0	0	0	0	0	3	20	2	0	1	0	1	0	24	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	5	1	0	1	0	0	0	7	83	6	1	2	0	1	0	93	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00	2	0	0	0	0	0	0	2	19	4	0	0	0	0	0	23	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	1	0	0	0	0	0	0	1	18	2	0	1	1	0	0	22	11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	1	0	0	0	0	0	0	1	19	4	1	0	0	1	0	25	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	3	0	1	0	0	0	0	4	17	2	0	1	1	0	1	22	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	7	0	1	0	0	0	0	8	73	12	1	2	2	1	1	92	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	19	3	1	0	0	0	0	23	12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	2	0	0	0	0	0	0	2	11	1	0	0	0	0	0	12	12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	2	0	0	0	0	0	2	24	3	0	1	2	0	0	30	12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	4	1	0	1	0	0	0	6	20	3	0	0	0	0	0	23	12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	6	3	0	1	0	0	0	10	74	10	1	1	2	0	0	88	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	1	0	0	0	0	0	0	1	24	3	1	0	1	0	0	29	13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	3	1	0	0	0	0	0	4	19	2	0	0	2	0	0	23	13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:30	4	0	0	0	0	0	0	4	20	2	0	0	1	0	0	23	13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	4	0	0	0	0	0	0	4	35	4	0	0	0	0	0	39	13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	12	1	0	0	0	0	0	13	98	11	1	0	4	0	0	114	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:00	3	2	0	0	0	0	0	5	33	5	0	0	0	0	0	38	14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	1	1	0	0	0	0	0	2	22	3	0	2	1	1	0	29	14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	0	2	0	0	0	0	0	2	24	2	0	1	1	0	0	28	14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	2	1	0	0	0	0	0	3	30	2	2	0	0	0	0	34	14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	6	6	0	0	0	0	0	12	109	12	2	3	2	1	0	129	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	41	3	0	0	1	0	0	45	15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	4	0	0	0	0	0	0	4	29	4	0	0	3	0	0	36	15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	2	1	0	1	0	0	0	4	23	5	1	0	4	0	0	33	15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	4	0	0	0	0	0	0	4	31	6	0	0	0	0	0	37	15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	10	1	0	1	0	0	0	12	124	18	1	0	8	0	0	151	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	3	0	0	2	0	0	0	5	28	1	0	0	0	0	0	29	16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	3	1	0	0	0	0	0	4	34	6	0	0	1	0	0	41	16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	1	1	1	0	0	0	0	3	34	4	0	0	1	0	0	39	16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	4	0	0	0	0	0	0	4	29	4	0	0	1	1	0	35	16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	11	2	1	2	0	0	0	16	125	15	0	0	3	1	0	144	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:00	6	2	0	0	0	0	0	8	31	7	0	0	0	0	0	38	17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	6	2	0	0	0	0	0	8	27	4	1	0	0	0	0	32	17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	0	0	0	0	0	1	22	4	0	0	0	0	0	26	17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	3	1	0	0	0	0	0	4	23	4	1	0	0	0	0	28	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	16	5	0	0	0	0	0	21	103	19	2	0	0	0	0	124	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	0	1	0	1	0	0	0	2	26	3	0	0	0	1	0	30	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	3	0	0	0	0	0	0	3	26	2	0	0	0	0	0	28	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	2	0	0	0	0	0	0	2	27	1	0	0	0	0	0	28	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	3	0	0	0	0	0	0	3	24	1	0	0	0	0	0	25	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	8	1	0	1	0	0	0	10	103	7	0	0	0	1	0	111	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	100	23	5	10	0	0	0	138	1317	147	15	13	29	7	3	1531	Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	To Arm A - Sliproad onto M1(NB)							Veh. Total	From Arm A - Sliproad onto M1(NB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	12	2	2	3	0	0	0	19	0	0	0	0	0	0	0	0
07:15	13	3	1	1	0	0	0	18	0	0	0	0	0	0	0	0
07:30	21	4	1	4	0	0	0	30	0	0	0	0	0	0	0	0
07:45	36	2	3	2	0	0	0	43	0	0	0	0	0	0	0	0
Hour	82	11	7	10	0	0	0	110	0	0	0	0	0	0	0	0
08:00	40	4	1	4	1	0	0	50	0	0	0	0	0	0	0	0
08:15	43	8	1	2	2	0	0	56	0	0	0	0	0	0	0	0
08:30	44	4	1	6	0	0	0	55	0	0	0	0	0	0	0	0
08:45	34	4	1	3	0	0	0	42	0	0	0	0	0	0	0	0
Hour	161	20	4	15	3	0	0	203	0	0	0	0	0	0	0	0
09:00	39	9	1	5	1	0	0	55	0	0	0	0	0	0	0	0
09:15	35	5	5	1	0	0	0	46	0	0	0	0	0	0	0	0
09:30	25	5	6	4	0	0	0	40	0	0	0	0	0	0	0	0
09:45	24	3	2	2	0	0	0	31	0	0	0	0	0	0	0	0
Hour	123	22	14	12	1	0	0	172	0	0	0	0	0	0	0	0
10:00	22	5	2	1	1	0	0	31	0	0	0	0	0	0	0	0
10:15	24	5	8	4	1	0	0	42	0	0	0	0	0	0	0	0
10:30	25	3	2	4	1	0	0	35	0	0	0	0	0	0	0	0
10:45	40	2	4	0	0	0	0	46	0	0	0	0	0	0	0	0
Hour	111	15	16	9	3	0	0	154	0	0	0	0	0	0	0	0
11:00	27	7	4	7	1	0	0	46	0	0	0	0	0	0	0	0
11:15	19	7	2	5	1	0	0	34	0	0	0	0	0	0	0	0
11:30	16	3	1	5	0	0	0	25	0	0	0	0	0	0	0	0
11:45	17	7	6	3	0	0	0	33	0	0	0	0	0	0	0	0
Hour	79	24	13	20	2	0	0	138	0	0	0	0	0	0	0	0
12:00	19	4	2	4	1	0	0	30	0	0	0	0	0	0	0	0
12:15	33	3	1	9	0	0	0	46	0	0	0	0	0	0	0	0
12:30	24	5	2	7	0	0	0	38	0	0	0	0	0	0	0	0
12:45	28	9	3	6	0	0	0	46	0	0	0	0	0	0	0	0
Hour	104	21	8	26	1	0	0	160	0	0	0	0	0	0	0	0
13:00	22	8	2	3	1	0	0	36	0	0	0	0	0	0	0	0
13:15	33	4	2	2	1	0	0	42	0	0	0	0	0	0	0	0
13:30	38	3	2	2	0	0	0	45	0	0	0	0	0	0	0	0
13:45	36	6	2	4	0	0	0	48	0	0	0	0	0	0	0	0
Hour	129	21	8	11	2	0	0	171	0	0	0	0	0	0	0	0
14:00	27	7	3	4	1	0	0	42	0	0	0	0	0	0	0	0
14:15	27	6	2	4	1	0	0	40	0	0	0	0	0	0	0	0
14:30	25	5	1	0	1	0	0	32	0	0	0	0	0	0	0	0
14:45	26	6	2	7	1	0	0	42	0	0	0	0	0	0	0	0
Hour	105	24	8	15	4	0	0	156	0	0	0	0	0	0	0	0
15:00	37	6	1	4	0	0	0	48	0	0	0	0	0	0	0	0
15:15	39	7	3	5	0	0	0	54	0	0	0	0	0	0	0	0
15:30	41	13	1	6	1	0	0	62	0	0	0	0	0	0	0	0
15:45	41	8	1	4	0	0	0	54	0	0	0	0	0	0	0	0
Hour	158	34	6	19	1	0	0	218	0	0	0	0	0	0	0	0
16:00	62	13	1	7	2	0	0	85	0	0	0	0	0	0	0	0
16:15	65	19	3	3	0	0	0	90	0	0	0	0	0	0	0	0
16:30	82	29	2	3	0	1	0	117	0	0	0	0	0	0	0	0
16:45	91	29	2	3	0	0	0	125	0	0	0	0	0	0	0	0
Hour	300	90	8	16	2	1	0	417	0	0	0	0	0	0	0	0
17:00	131	27	2	4	0	0	0	164	0	0	0	0	0	0	0	0
17:15	102	19	1	1	1	0	0	124	0	0	0	0	0	0	0	0
17:30	111	17	2	0	0	0	0	130	0	0	0	0	0	0	0	0
17:45	105	17	2	0	0	0	0	124	0	0	0	0	0	0	0	0
Hour	449	80	7	5	1	0	0	542	0	0	0	0	0	0	0	0
18:00	97	9	2	2	1	0	0	111	0	0	0	0	0	0	0	0
18:15	76	16	1	0	0	0	0	93	0	0	0	0	0	0	0	0
18:30	74	5	1	0	0	0	0	80	0	0	0	0	0	0	0	0
18:45	53	9	0	1	2	0	0	65	0	0	0	0	0	0	0	0
Hour	300	39	4	3	3	0	0	349	0	0	0	0	0	0	0	0
Total	2101	401	103	161	23	1	0	2790	0	0	0	0	0	0	0	0

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	To Arm B - Overbridge							Veh. Total	From Arm B - Overbridge							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	23	1	0	1	1	0	0	26	23	5	2	3	0	0	0	33
07:15	20	2	1	0	0	1	0	24	15	3	2	1	2	0	1	24
07:30	31	2	2	0	6	0	0	41	36	9	2	4	1	0	0	52
07:45	38	5	1	2	2	0	1	49	48	12	4	2	0	0	0	66
Hour	112	10	4	3	9	1	1	140	122	29	10	10	3	0	1	175
08:00	37	5	2	0	0	0	0	44	49	10	1	4	2	0	0	66
08:15	60	5	0	1	1	0	0	67	50	11	1	2	3	0	0	67
08:30	80	7	2	0	1	1	0	91	59	5	1	4	1	0	0	70
08:45	86	8	3	0	2	0	0	99	58	7	3	4	0	0	0	72
Hour	263	25	7	1	4	1	0	301	216	33	6	14	6	0	0	275
09:00	48	9	2	2	0	0	1	62	56	12	2	4	3	0	0	77
09:15	55	8	0	1	2	0	0	66	51	9	5	2	1	0	0	68
09:30	33	2	1	0	1	0	0	37	41	6	7	4	0	0	0	58
09:45	40	3	2	1	0	0	0	46	40	5	2	2	0	0	0	49
Hour	176	22	5	4	3	0	1	211	188	32	16	12	4	0	0	252
10:00	33	4	3	1	0	0	0	41	38	10	2	1	1	0	0	52
10:15	29	3	1	3	2	0	0	38	38	7	8	4	1	0	0	58
10:30	28	2	0	0	0	0	0	30	33	4	3	3	1	0	0	44
10:45	26	4	1	5	2	1	0	39	57	3	4	1	1	0	0	66
Hour	116	13	5	9	4	1	0	148	166	24	17	9	4	0	0	220
11:00	27	7	0	0	1	0	0	35	53	11	4	7	1	0	0	76
11:15	27	4	3	1	2	0	0	37	41	12	2	8	2	0	0	65
11:30	28	5	2	1	0	1	0	37	34	8	2	10	0	1	0	55
11:45	25	5	0	2	2	0	1	35	34	10	6	3	0	0	0	53
Hour	107	21	5	4	5	1	1	144	162	41	14	28	3	1	0	249
12:00	27	5	2	2	1	0	0	37	47	8	2	4	1	0	0	62
12:15	23	2	0	1	0	0	0	26	65	8	2	9	0	1	1	86
12:30	37	7	2	2	2	0	0	50	56	4	3	7	0	0	0	70
12:45	24	4	0	0	0	0	0	28	51	11	3	5	0	0	0	70
Hour	111	18	4	5	3	0	0	141	219	31	10	25	1	1	1	288
13:00	34	4	1	0	3	0	0	42	55	11	2	3	1	0	1	73
13:15	32	3	0	1	2	0	0	38	54	7	2	2	1	0	0	66
13:30	34	3	1	0	1	0	0	39	64	4	3	2	0	0	0	73
13:45	47	4	1	0	0	0	0	52	62	10	2	4	1	0	0	79
Hour	147	14	3	1	6	0	0	171	235	32	9	11	3	0	1	291
14:00	45	7	0	0	1	0	0	53	42	9	3	4	1	0	0	59
14:15	33	6	0	4	3	1	0	47	40	6	2	4	3	0	0	55
14:30	34	3	0	1	1	0	0	39	58	5	1	0	1	0	0	65
14:45	38	4	3	1	0	0	0	46	50	10	3	8	3	0	0	74
Hour	150	20	3	6	5	1	0	185	190	30	9	16	8	0	0	253
15:00	60	5	2	2	1	0	0	70	60	9	1	4	1	0	0	75
15:15	38	4	0	2	5	0	0	49	60	9	3	7	0	1	0	80
15:30	41	9	1	0	4	0	0	55	69	17	1	5	1	0	0	93
15:45	53	9	0	1	1	0	0	64	63	12	1	4	1	0	0	81
Hour	192	27	3	5	11	0	0	238	252	47	6	20	3	1	0	329
16:00	50	2	0	0	1	0	0	53	90	16	2	7	4	1	0	120
16:15	51	8	3	0	3	0	0	65	91	21	3	3	0	0	0	118
16:30	58	5	1	1	2	0	0	67	109	31	1	3	2	1	0	147
16:45	50	6	0	1	2	1	0	60	125	38	3	4	0	0	0	170
Hour	209	21	4	2	8	1	0	245	415	106	9	17	6	2	0	555
17:00	54	9	0	0	1	0	0	64	174	32	2	5	0	0	0	213
17:15	46	7	2	0	2	0	0	57	128	21	1	1	1	0	0	152
17:30	47	8	0	1	1	0	0	57	161	23	2	1	0	0	0	187
17:45	59	6	1	0	1	0	0	67	153	19	2	0	1	1	0	176
Hour	206	30	3	1	5	0	0	245	616	95	7	7	2	1	0	728
18:00	45	3	0	0	5	1	0	54	133	12	2	1	1	0	0	149
18:15	54	6	0	0	3	0	0	63	109	20	1	0	0	0	0	130
18:30	46	3	1	0	3	0	0	53	103	6	1	0	0	0	0	110
18:45	42	2	0	0	1	0	0	45	71	12	1	1	2	0	0	87
Hour	187	14	1	0	12	1	0	215	416	50	5	2	3	0	0	476
Total	1976	235	47	41	75	7	3	2384	3197	550	118	171	46	6	3	4091

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Site No. 1
Location Sliproad onto M1(NB) / Overbridge / Sliproad Off M1(NB) / L1601
Date Thursday 17 October 2019

Time	To Arm C - Sliproad Off M1(NB)							Veh. Total	From Arm C - Sliproad Off M1(NB)							Veh. Total	Time	To Arm D - L1601							Veh. Total	From Arm D - L1601							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	10	0	0	1	1	0	0	12	07:00	15	3	0	0	0	0	0	18	17	1	0	0	0	0	0	18
07:15	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	4	07:15	4	2	1	0	2	0	1	10	19	3	1	0	0	1	0	24
07:30	0	0	0	0	0	0	0	0	7	1	2	0	1	0	0	11	07:30	17	5	1	1	1	0	0	25	26	1	0	1	5	0	0	33
07:45	0	0	0	0	0	0	0	0	7	2	1	0	1	0	0	11	07:45	14	10	2	0	0	0	0	26	33	3	1	2	1	0	1	41
Hour	0	0	0	0	0	0	0	0	27	4	3	1	3	0	0	38	Hour	50	20	4	1	3	0	1	79	95	8	2	3	6	1	1	116
08:00	0	0	0	0	0	0	0	0	6	1	2	0	0	0	0	9	08:00	8	6	0	0	1	0	0	15	30	4	0	0	0	0	0	34
08:15	0	0	0	0	0	0	0	0	15	1	0	0	1	0	0	17	08:15	9	3	0	0	1	0	0	13	47	4	0	1	0	0	0	52
08:30	0	0	0	0	0	0	0	0	16	2	1	0	0	0	0	19	08:30	24	1	0	0	1	0	0	26	73	5	1	2	1	1	0	83
08:45	0	0	0	0	0	0	0	0	19	2	2	0	2	0	0	25	08:45	28	3	2	1	0	0	0	34	71	6	1	0	0	0	0	78
Hour	0	0	0	0	0	0	0	0	56	6	5	0	3	0	0	70	Hour	69	13	2	1	3	0	0	88	221	19	2	3	1	1	0	247
09:00	0	0	0	0	0	0	0	0	15	3	1	2	0	0	0	21	09:00	21	4	1	0	2	0	0	28	37	7	1	1	0	0	1	47
09:15	0	0	0	0	0	0	0	0	20	6	0	0	2	0	0	28	09:15	22	5	2	1	1	0	0	31	41	3	2	1	0	0	0	47
09:30	0	0	0	0	0	0	0	0	10	2	0	0	0	0	0	12	09:30	18	2	0	0	0	0	0	20	25	1	0	0	1	0	0	27
09:45	0	0	0	0	0	0	0	0	13	1	0	0	1	0	0	15	09:45	14	2	0	0	1	0	0	17	25	2	2	1	0	0	0	30
Hour	0	0	0	0	0	0	0	0	58	12	1	2	3	0	0	76	Hour	75	13	3	1	4	0	0	96	128	13	5	3	1	0	1	151
10:00	0	0	0	0	0	0	0	0	10	2	2	1	1	0	0	16	10:00	17	6	0	0	1	0	0	24	24	3	1	0	0	0	0	28
10:15	0	0	0	0	0	0	0	0	11	2	1	2	2	0	0	18	10:15	16	3	0	1	0	0	0	20	20	2	0	2	0	0	0	24
10:30	0	0	0	0	0	0	0	0	12	1	0	1	0	0	0	14	10:30	13	0	1	0	0	0	0	14	21	0	0	0	0	0	0	21
10:45	0	0	0	0	0	0	0	0	6	2	1	4	2	0	0	15	10:45	20	1	0	1	1	0	0	23	23	2	0	1	0	1	0	27
Hour	0	0	0	0	0	0	0	0	39	7	4	8	5	0	0	63	Hour	66	10	1	2	2	0	0	81	88	7	1	3	0	1	0	100
11:00	0	0	0	0	0	0	0	0	10	3	0	0	1	0	0	14	11:00	30	4	0	0	0	0	0	34	21	4	0	0	0	0	0	25
11:15	0	0	0	0	0	0	0	0	11	2	4	0	1	0	0	18	11:15	25	5	1	3	1	0	0	35	19	2	0	1	1	0	0	23
11:30	0	0	0	0	0	0	0	0	12	1	1	1	0	0	0	15	11:30	22	5	1	5	0	1	0	34	20	4	1	0	0	1	0	26
11:45	0	0	0	0	0	0	0	0	9	3	0	1	1	0	0	14	11:45	21	3	1	0	0	0	0	25	20	2	1	1	1	0	1	26
Hour	0	0	0	0	0	0	0	0	42	9	5	2	3	0	0	61	Hour	98	17	3	8	1	1	0	128	80	12	2	2	2	1	1	100
12:00	0	0	0	0	0	0	0	0	11	1	1	2	1	0	0	16	12:00	31	3	0	0	0	0	0	34	19	3	1	0	0	0	0	23
12:15	0	0	0	0	0	0	0	0	13	1	0	1	0	0	0	15	12:15	35	5	1	0	0	1	1	43	13	1	0	0	0	0	0	14
12:30	0	0	0	0	0	0	0	0	14	3	2	1	0	0	0	20	12:30	33	0	1	0	0	0	0	34	24	5	0	1	2	0	0	32
12:45	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	6	12:45	28	3	0	0	0	0	0	31	24	4	0	1	0	0	0	29
Hour	0	0	0	0	0	0	0	0	43	6	3	4	1	0	0	57	Hour	127	11	2	0	0	1	1	142	80	13	1	2	2	0	0	98
13:00	0	0	0	0	0	0	0	0	10	1	0	0	3	0	0	14	13:00	34	3	0	0	1	0	1	39	25	3	1	0	1	0	0	30
13:15	0	0	0	0	0	0	0	0	12	1	0	1	0	0	0	14	13:15	23	4	0	0	0	0	0	27	22	3	0	0	2	0	0	27
13:30	0	0	0	0	0	0	0	0	14	1	1	1	0	0	0	17	13:30	30	1	1	1	0	0	0	33	24	2	0	0	1	0	0	27
13:45	0	0	0	0	0	0	0	0	14	0	2	0	0	0	0	16	13:45	32	4	1	0	1	0	0	38	39	4	0	0	0	0	0	43
Hour	0	0	0	0	0	0	0	0	50	3	3	2	3	0	0	61	Hour	119	12	2	1	2	0	1	137	110	12	1	0	4	0	0	127
14:00	0	0	0	0	0	0	0	0	14	3	0	0	1	0	0	18	14:00	20	5	0	0	0	0	0	25	36	7	0	0	0	0	0	43
14:15	0	0	0	0	0	0	0	0	12	3	0	2	1	0	0	18	14:15	15	1	0	0	1	0	0	17	23	4	0	2	1	1	0	31
14:30	0	0	0	0	0	0	0	0	11	1	0	0	0	0	0	12	14:30	34	2	0	0	0	0	0	36	24	4	0	1	1	0	0	30
14:45	0	0	0	0	0	0	0	0	9	2	1	0	0	0	0	12	14:45	27	5	1	0	2	0	0	35	32	3	2	0	0	0	0	37
Hour	0	0	0	0	0	0	0	0	46	9	1	2	2	0	0	60	Hour	96	13	1	0	3	0	0	113	115	18	2	3	2	1	0	141
15:00	0	0	0	0	0	0	0	0	19	2	2	2	0	0	0	25	15:00	23	3	0	0	1	0	0	27	41	3	0	0	1	0	0	45
15:15	0	0	0	0	0	0	0	0	11	0	0	2	2	0	0	15	15:15	27	2	0	2	0	1	0	32	33	4	0	0	3	0	0	40
15:30	0	0	0	0	0	0	0	0	18	5	0	0	0	0	0	23	15:30	30	6	0	0	0	0	0	36	25	6	1	1	4	0	0	37
15:45	0	0	0	0	0	0	0	0	21	3	0	1	1	0	0	26	15:45	25	4	0	0	1	0	0	30	35	6	0	0	0	0	0	41
Hour	0	0	0	0	0	0	0	0	69	10	2	5	3	0	0	89	Hour	105	15	0	2	2	1	0	125	134	19	1	1	8	0	0	163
16:00	0	0	0	0	0	0	0	0	22	2	0	0	1	0	0	25	16:00	31	4	1	2	2	1	0	41	31	1	0	2	0	0	0	34
16:15	0	0	0	0	0	0	0	0	17	3	3	0	2	0	0	25	16:15	29	4	0	0	0	0	0	33	37	7	0	0	1	0	0	45
16:30	0	0	0	0	0	0	0	0	25	3	1	1	1	0	0	31	16:30	29	5	0	0	2	0	0	36	35	5	1	0	1	0	0	42
16:45	0	0	0	0	0	0	0	0	22	4	0	1	1	0	0	28	16:45	39	11	1	1	0	0	0	52	33	4	0	0	1	1	0	39
Hour	0	0	0	0	0	0	0	0	86	12	4	2	5	0	0	109	Hour	128	24	2	3	4	1	0	162	136	17	1	2	3	1	0	160
17:00	0	0	0	0	0	0	0	0	26	2	0	0	1	0	0	29	17:00	52	7	0	1	0	0	0	60	37	9	0	0	0	0	0	46
17:15	0	0	0	0	0	0	0	0	22	3	1	0	2	0	0	28	17:15	35	4	0	0	0	0	0	39	33	6	1	0	0	0	0	40
17:30	0	0	0	0	0	0	0	0	28	6	0	1	1	0	0	36	17:30	54	8	0	1	0	0	0	63	23	4	0	0	0	0	0	27
17:45	0	0	0	0	0	0	0	0	39	2	0	0	1	0	0	42	17:45	54	3	0	0	1	1	0	59	26	5	1	0	0	0	0	32
Hour	0	0	0	0	0	0	0	0	115	13	1	1	5	0	0	135	Hour	195	22	0	2	1	1	0	221	119	24	2	0	0	0	0	145
18:00	0	0	0	0	0	0	0	0	21	1	0	0	5	0	0	27	18:00	38	5	0	0	0	0	0	43	26	4	0	1	0	1	0	32
18:15	0	0	0	0	0	0	0	0	27	4	0	0	3	0	0	34	18:15	35	4	0	0	0	0	0	39	29	2	0	0	0	0	0	31
18:30	0	0	0	0	0	0	0	0	21	2	1	0	3	1	0	28	18:30	33	1	0	0	0	1	0	35	29	1	0	0	0	0	0	30
18:45	0	0	0	0	0	0	0	0	19	1	0	0	1	0	0	21	18:45	22	3	1	0	0	0	0	26	27	1	0	0	0	0	0	28
Hour	0	0	0	0	0	0	0	0	88	8	1	0	12	1	0	110	Hour	128	13	1	0	0	1	0	143	111	8	0	1	0	1	0	121
Total	0	0	0	0	0	0	0	0	719	99	33	29	48	1	0	929	Total	1256	183	21	21	25	6	3	1515	1417	170	20	23	29	7	3	1669

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	A to B - Sliproad Off M1(SB) to Donore Road							Veh. Total	A to C - Sliproad Off M1(SB) to Sliproad Onto M1(SB)							Veh. Total	Time	A to D - Sliproad Off M1(SB) to Overbridge							Veh. Total	A to A - Sliproad Off M1(SB) to Sliproad Off M1(SB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	2	0	0	0	1	0	0	3	35	15	0	6	0	0	0	56	07:00	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
07:15	8	2	2	0	0	0	0	12	37	18	1	10	0	0	0	66	07:15	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
07:30	7	2	0	0	1	0	0	10	38	17	1	5	0	0	0	61	07:30	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
07:45	15	4	0	0	0	0	0	19	61	13	2	0	0	0	0	76	07:45	1	3	1	0	0	0	0	5	0	0	0	0	0	0	0	0
Hour	32	8	2	0	2	0	0	44	171	63	4	21	0	0	0	259	Hour	3	5	2	0	0	0	0	10	0	0	0	0	0	0	0	0
08:00	17	5	2	0	1	0	0	25	42	6	1	2	0	0	0	51	08:00	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
08:15	25	3	1	0	0	0	0	29	53	5	1	1	1	0	0	61	08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	35	3	1	1	0	0	0	40	60	9	0	2	1	0	0	72	08:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:45	45	7	1	2	1	0	0	56	73	5	3	2	0	0	0	83	08:45	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Hour	122	18	5	3	2	0	0	150	228	25	5	7	2	0	0	267	Hour	3	2	0	0	0	0	0	5	0	0	0	0	0	0	0	0
09:00	44	3	2	0	1	0	0	50	46	6	1	5	0	0	0	58	09:00	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
09:15	18	2	0	1	0	0	0	21	34	5	0	5	0	0	0	44	09:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
09:30	19	3	0	1	1	0	0	24	20	2	2	3	0	0	0	27	09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	10	1	2	1	0	0	0	14	13	2	2	5	0	0	0	22	09:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	91	9	4	3	2	0	0	109	113	15	5	18	0	0	0	151	Hour	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
10:00	9	1	1	0	1	0	0	12	12	6	2	2	0	0	0	22	10:00	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
10:15	20	0	0	1	0	0	0	21	9	2	2	3	0	0	0	16	10:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10:30	11	1	2	1	0	0	0	15	12	3	2	4	0	0	0	21	10:30	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10:45	20	3	0	2	0	0	0	25	13	3	1	4	0	0	0	21	10:45	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
Hour	60	5	3	4	1	0	0	73	46	14	7	13	0	0	0	80	Hour	4	1	1	0	0	0	0	6	0	0	0	0	0	0	0	0
11:00	9	1	4	2	1	0	0	17	8	3	3	5	0	0	0	19	11:00	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
11:15	16	2	1	0	0	0	0	19	17	3	1	6	0	0	0	27	11:15	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
11:30	10	1	2	1	0	0	0	14	11	3	1	4	1	0	0	20	11:30	3	1	2	1	0	1	0	8	0	0	0	0	0	0	0	0
11:45	16	4	3	2	0	0	0	25	12	1	3	2	0	0	0	18	11:45	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Hour	51	8	10	5	1	0	0	75	48	10	8	17	1	0	0	84	Hour	13	4	2	1	0	1	0	21	0	0	0	0	0	0	0	0
12:00	7	2	0	0	2	0	0	11	17	3	1	2	0	0	0	23	12:00	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
12:15	14	3	5	1	0	0	0	23	18	4	3	3	0	0	0	28	12:15	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
12:30	15	1	3	0	0	0	0	19	10	1	2	3	0	0	0	16	12:30	1	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0
12:45	15	3	1	1	0	0	0	20	11	0	0	0	0	0	0	11	12:45	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0
Hour	51	9	9	2	2	0	0	73	56	8	6	8	0	0	0	78	Hour	7	4	1	0	0	0	0	12	0	0	0	0	0	0	0	0
13:00	7	0	0	1	1	0	0	9	7	4	2	1	0	0	0	14	13:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
13:15	20	5	0	1	0	0	0	26	15	3	1	7	0	0	0	26	13:15	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
13:30	13	2	2	0	0	0	0	17	13	3	1	7	1	0	0	25	13:30	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
13:45	14	1	1	1	0	0	0	17	14	4	1	8	0	0	0	27	13:45	2	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Hour	54	8	3	3	1	0	0	69	49	14	5	23	1	0	0	92	Hour	8	2	0	0	0	0	0	10	0	0	0	0	0	0	0	0
14:00	14	2	2	0	2	0	0	20	11	2	1	4	0	0	0	18	14:00	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
14:15	8	3	2	2	0	0	0	15	10	2	1	4	1	0	0	18	14:15	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0
14:30	10	1	0	0	0	0	0	11	12	3	1	4	0	0	0	20	14:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14:45	22	4	0	0	0	0	0	26	8	7	1	2	0	0	0	18	14:45	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Hour	54	10	4	2	2	0	0	72	41	14	4	14	1	0	0	74	Hour	9	0	0	0	1	0	0	10	0	0	0	0	0	0	0	0
15:00	23	3	1	1	1	0	0	29	10	3	2	2	0	0	0	17	15:00	2	2	1	0	0	0	0	5	0	0	0	0	0	0	0	0
15:15	9	0	0	0	1	1	0	11	16	2	0	2	0	0	0	20	15:15	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0
15:30	18	2	0	1	0	0	0	21	14	7	1	0	0	0	0	22	15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	8	0	0	2	0	1	0	11	13	3	3	2	0	0	0	21	15:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	58	5	1	4	2	2	0	72	53	15	6	6	0	0	0	80	Hour	3	2	1	2	0	0	0	8	0	0	0	0	0	0	0	0
16:00	13	2	2	0	1	0	0	18	17	1	2	2	0	0	0	22	16:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
16:15	22	5	3	1	0	0	0	31	19	9	3	7	0	0	0	38	16:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:30	18	3	1	0	0	0	0	22	29	5	0	4	1	1	0	40	16:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:45	16	5	0	1	0	0	0	22	36	3	3	2	1	0	0	45	16:45	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	69	15	6	2	1	0	0	93	101	18	8	15	2	1	0	145	Hour	6	1	0	0	0	0	0	7	0	0	0	0	0	0	0	0
17:00	21	0	0	0	1	0	0	22	29	7	1	5	0	0	0	42	17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	35	1	0	0	0	0	0	36	28	5	0	1	0	0	0	34	17:15	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
17:30	25	2	0	0	0	0	0	27	23	6	3	3	1	0	0	36	17:30	2	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0
17:45	15	1	0	0	0	0	0	16	19	4	2	2	0	0	0	27	17:45	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
Hour	96	4	0	0	1	0	0	101	99	22	6	11	1	0	0	139	Hour	9	0	0	1	0	0	0	10	0	0	0	0	0	0	0	0
18:00	12	0	0	0	0	0	0	12	25	0	2	0	0	0	0	27	18:00	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
18:15	24	1	0	0	0	0	0	25	12	2	1	3	0	0	0	18	18:15	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
18:30	17	1	0	0	0	0	0	18	15	2	0	1	0	0	0	18	18:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18:45	23	1	0	0	0	0	0	24	15	1	0	2	0	0	0	18	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	76	3	0	0	0	0	0	79	67	5	3	6	0	0	0	81	Hour	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
Total	814	102	47	28	17	2	0	1010	1072	223	67	159	8	1	0	1530	Total	74	22	7	4	1	1	0	109	0	0	0	0	0	0	0	0

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	B to C - Donore Road to Sliproad Onto M1(SB)							Veh. Total	B to D - Donore Road to Overbridge							Veh. Total	Time	B to A - Donore Road to Sliproad Off M1(SB)							Veh. Total	B to B - Donore Road to Donore Road							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	46	7	2	1	6	1	0	63	12	0	0	1	0	0	0	13	07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	50	8	3	5	4	0	0	70	4	2	0	0	2	0	1	9	07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	59	13	3	4	5	0	0	84	20	8	2	2	1	0	0	33	07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	64	11	1	4	3	0	0	83	13	6	1	0	0	0	0	20	07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	219	39	9	14	18	1	0	300	49	16	3	3	3	0	1	75	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	48	8	5	5	2	0	0	68	15	5	0	0	2	0	0	22	08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15	44	5	1	4	5	0	0	59	10	5	0	1	2	0	0	18	08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	42	2	1	2	2	0	0	49	24	1	0	0	1	0	0	26	08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	44	10	1	1	1	1	0	58	23	3	2	1	0	0	0	29	08:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Hour	178	25	8	12	10	1	0	234	72	14	2	2	5	0	0	95	Hour	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
09:00	35	4	5	3	0	0	0	47	18	9	2	1	3	0	0	33	09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	41	7	4	4	2	0	0	58	23	8	3	1	1	0	0	36	09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30	33	5	3	5	2	0	0	48	21	4	3	1	0	0	0	29	09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	27	5	1	1	3	0	0	37	20	4	1	0	0	0	0	25	09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	136	21	13	13	7	0	0	190	82	25	9	3	4	0	0	123	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	39	4	3	3	0	0	0	49	22	5	2	0	0	0	0	29	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	52	8	2	1	0	0	0	63	18	4	3	1	1	0	0	27	10:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
10:30	34	2	3	5	4	0	0	48	24	1	3	2	1	0	0	31	10:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
10:45	38	11	0	4	1	0	0	54	38	2	1	1	1	0	0	43	10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	163	25	8	13	5	0	0	214	102	12	9	4	3	0	0	130	Hour	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:00	40	8	0	5	1	0	0	54	28	1	0	2	1	0	0	32	11:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
11:15	43	2	0	1	1	0	0	47	29	4	1	4	1	0	0	39	11:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:30	35	4	4	5	2	0	0	50	22	3	0	3	0	0	0	28	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	43	5	3	6	1	1	0	59	24	4	4	1	0	0	0	33	11:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Hour	161	19	7	17	5	1	0	210	103	12	5	10	2	0	0	132	Hour	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
12:00	47	8	2	5	0	0	0	62	30	5	1	1	1	0	0	38	12:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
12:15	44	4	2	4	0	0	0	54	44	5	2	1	0	1	0	53	12:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
12:30	41	4	3	8	3	1	0	60	44	0	3	0	0	0	0	47	12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	43	9	4	4	4	0	0	64	36	6	0	1	0	0	0	43	12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	175	25	11	21	7	1	0	240	154	16	6	3	1	1	0	181	Hour	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
13:00	44	13	3	2	1	0	0	63	45	6	2	1	1	0	1	56	13:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
13:15	41	5	0	4	1	0	0	51	32	3	0	2	1	0	0	38	13:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
13:30	41	6	4	1	1	0	0	53	46	5	2	1	0	0	0	54	13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	36	3	1	4	2	0	0	46	44	2	2	1	1	0	0	50	13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	162	27	8	11	5	0	0	213	167	16	6	5	3	0	1	198	Hour	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
14:00	42	7	1	2	4	0	0	56	21	6	1	1	1	0	0	30	14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:15	31	6	4	2	1	0	0	44	21	5	0	0	2	0	0	28	14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:30	41	7	1	2	1	0	0	52	42	4	1	0	0	0	0	47	14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14:45	39	8	1	4	3	0	0	55	27	8	2	2	2	0	0	41	14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	153	28	7	10	9	0	0	207	111	23	4	3	5	0	0	146	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00	45	12	1	2	2	0	0	62	30	1	0	0	0	0	0	31	15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:15	45	3	0	6	2	0	0	56	41	5	0	0	0	0	0	46	15:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
15:30	47	5	0	5	2	0	0	59	38	6	0	0	0	0	0	44	15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	60	7	1	3	3	0	0	74	37	6	0	1	1	0	0	45	15:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Hour	197	27	2	16	9	0	0	251	146	18	0	1	1	0	0	166	Hour	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
16:00	47	5	0	1	0	0	0	53	52	6	2	1	5	1	0	67	16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	61	2	1	4	1	0	0	69	43	7	2	2	0	0	0	54	16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	54	6	0	2	2	0	0	64	55	9	1	1	2	1	0	69	16:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
16:45	48	11	1	3	1	0	0	64	66	12	3	1	0	0	0	82	16:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Hour	210	24	2	10	4	0	0	250	216	34	8	5	7	2	0	272	Hour	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
17:00	60	9	1	1	0	0	0	71	110	13	1	1	0	0	0	125	17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	68	7	0	1	0	0	0	76	78	5	0	0	1	0	0	84	17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	71	9	0	0	2	0	0	82	86	5	0	0	0	0	0	91	17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	45	5	1	3	1	0	0	55	83	6	0	0	1	1	0	91	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	244	30	2	5	3	0	0	284	357	29	1	1	2	1	0	391	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:00	69	7	1	0	2	0	0	79	64	7	0	0	1	0	0	72	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	63	5	1	1	0	0	0	70	54	10	0	0	0	0	0	64	18:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
18:30	42	6	0	0	1	0	0	49	54	2	1	0	0	0	0	57	18:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
18:45	50	7	1	0	2	0	0	60	41	6	1	0	1	0	0	49	18:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
Hour	224	25	3	1	5	0	0	258	213	25	2	0	2	0	0	242	Hour	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	3
Total	2222	315	80	143	87	4	0	2851	1772	240	55	40	38	4	2	2151	Total	0	0	0	0	0	0	0	0	18	0	1	0	0	0	0	19

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	C to D - Sliproad Onto M1(SB) to Overbridge							Veh. Total	C to A - Sliproad Onto M1(SB) to Sliproad Off M1(SB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	9	3	2	2	0	0	0	16	0	0	0	0	0	0	0	0
07:15	11	1	1	1	0	0	0	14	0	0	0	0	0	0	0	0
07:30	15	2	0	2	0	0	1	20	0	0	0	0	0	0	0	0
07:45	36	1	2	2	0	0	0	41	0	0	0	0	0	0	0	0
Hour	71	7	5	7	0	0	1	91	0	0	0	0	0	0	0	0
08:00	30	3	1	4	0	0	0	38	0	0	0	0	0	0	0	0
08:15	39	6	1	1	1	0	0	48	0	0	0	0	0	0	0	0
08:30	34	3	1	4	0	0	0	42	0	0	0	0	0	0	0	0
08:45	30	2	1	3	0	0	0	36	0	0	0	0	0	0	0	0
Hour	133	14	4	12	1	0	0	164	0	0	0	0	0	0	0	0
09:00	36	3	0	3	0	0	0	42	0	0	0	0	0	0	0	0
09:15	26	0	2	1	0	0	0	29	0	0	0	0	0	0	0	0
09:30	20	2	3	3	0	0	0	28	0	0	0	0	0	0	0	0
09:45	18	2	1	2	0	0	0	23	0	0	0	0	0	0	0	0
Hour	100	7	6	9	0	0	0	122	0	0	0	0	0	0	0	0
10:00	14	5	1	1	1	0	0	22	0	0	0	0	0	0	0	0
10:15	17	2	4	3	0	0	0	26	0	0	0	0	0	0	0	0
10:30	12	1	0	1	0	0	0	14	0	0	0	0	0	0	0	0
10:45	16	2	2	0	0	0	0	20	0	0	0	0	0	0	0	0
Hour	59	10	7	5	1	0	0	82	0	0	0	0	0	0	0	0
11:00	15	6	4	5	0	0	0	30	0	0	0	0	0	0	0	0
11:15	13	5	1	5	1	0	0	25	0	0	0	0	0	0	0	0
11:30	10	3	0	5	0	0	0	18	0	0	0	0	0	0	0	0
11:45	9	4	2	2	0	0	0	17	0	0	0	0	0	0	0	0
Hour	47	18	7	17	1	0	0	90	0	0	0	0	0	0	0	0
12:00	13	3	1	5	0	0	0	22	0	0	0	0	0	0	0	0
12:15	17	2	0	7	0	0	0	26	0	0	0	0	0	0	0	0
12:30	11	3	0	6	0	0	0	20	0	0	0	0	0	0	0	0
12:45	15	5	2	5	0	0	0	27	0	0	0	0	0	0	0	0
Hour	56	13	3	23	0	0	0	95	0	0	0	0	0	0	0	0
13:00	11	4	0	2	0	0	0	17	0	0	0	0	0	0	0	0
13:15	15	2	2	1	0	0	0	20	0	0	0	0	0	0	0	0
13:30	18	1	1	1	0	0	0	21	0	0	0	0	0	0	0	0
13:45	14	5	0	3	0	0	0	22	0	0	0	0	0	0	0	0
Hour	58	12	3	7	0	0	0	80	0	0	0	0	0	0	0	0
14:00	18	4	2	3	0	0	0	27	0	0	0	0	0	0	0	0
14:15	17	1	2	4	0	0	0	24	0	0	0	0	0	0	0	0
14:30	14	2	0	1	1	0	0	18	0	0	0	0	0	0	0	0
14:45	18	1	1	5	1	0	0	26	0	0	0	0	0	0	0	0
Hour	67	8	5	13	2	0	0	95	0	0	0	0	0	0	0	0
15:00	24	7	0	4	1	0	0	36	0	0	0	0	0	0	0	0
15:15	19	5	3	5	0	1	0	33	0	0	0	0	0	0	0	0
15:30	30	11	1	5	0	0	0	47	0	0	0	0	0	0	0	0
15:45	22	4	1	5	0	0	0	32	0	0	0	0	0	0	0	0
Hour	95	27	5	19	1	1	0	148	0	0	0	0	0	0	0	0
16:00	36	10	1	3	0	0	0	50	0	0	0	0	0	0	0	0
16:15	39	12	0	2	0	0	0	53	0	0	0	0	0	0	0	0
16:30	47	22	0	2	0	0	0	71	0	0	0	0	0	0	0	0
16:45	54	22	0	2	0	0	0	78	0	0	0	0	0	0	0	0
Hour	176	66	1	9	0	0	0	252	0	0	0	0	0	0	0	0
17:00	64	22	1	4	0	0	0	91	0	0	0	0	0	0	0	0
17:15	48	17	1	1	0	0	0	67	0	0	0	0	0	0	0	0
17:30	67	18	2	0	0	0	0	87	0	0	0	0	0	0	0	0
17:45	57	15	2	0	0	0	0	74	0	0	0	0	0	0	0	0
Hour	236	72	6	5	0	0	0	319	0	0	0	0	0	0	0	0
18:00	59	5	2	1	0	0	0	67	0	0	0	0	0	0	0	0
18:15	52	9	1	0	0	0	0	62	0	0	0	0	0	0	0	0
18:30	46	7	0	0	0	0	0	53	0	0	0	0	0	0	0	0
18:45	37	12	0	0	1	0	0	50	0	0	0	0	0	0	0	0
Hour	194	33	3	1	1	0	0	232	0	0	0	0	0	0	0	0
Total	1292	287	55	127	7	1	1	1770	0	0	0	0	0	0	0	0

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	C to B - Sliproad Onto M1(SB) to Donore Road							Veh. Total	C to C - Sliproad Onto M1(SB) to Sliproad Onto M1(SB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	16	0	0	2	0	0	0	18	0	0	0	0	0	0	0	0
07:15	19	1	1	1	1	0	0	23	0	0	0	0	0	0	0	0
07:30	15	1	1	1	0	0	0	18	0	0	0	0	0	0	0	0
07:45	29	4	0	4	1	0	0	38	0	0	0	0	0	0	0	0
Hour	79	6	2	8	2	0	0	97	0	0	0	0	0	0	0	0
08:00	27	6	0	5	1	0	0	39	0	0	0	0	0	0	0	0
08:15	26	1	0	3	0	0	0	30	0	0	0	0	0	0	0	0
08:30	39	4	0	3	1	0	0	47	2	0	0	0	0	0	0	2
08:45	50	3	5	6	3	0	0	67	0	0	0	0	0	0	0	0
Hour	142	14	5	17	5	0	0	183	2	0	0	0	0	0	0	2
09:00	39	1	0	3	4	0	0	47	0	0	0	0	0	0	0	0
09:15	31	8	2	2	0	0	0	43	0	0	0	0	0	0	0	0
09:30	28	2	0	1	0	0	0	31	0	0	0	0	0	0	0	0
09:45	26	7	0	2	1	0	0	36	0	0	0	0	0	0	0	0
Hour	124	18	2	8	5	0	0	157	0	0	0	0	0	0	0	0
10:00	33	4	0	5	0	0	0	42	1	0	0	0	0	0	0	1
10:15	22	2	1	2	2	0	0	29	0	0	0	0	0	0	0	0
10:30	32	2	2	2	0	0	0	38	0	0	0	0	0	0	0	0
10:45	25	3	0	1	0	0	0	29	0	0	0	0	0	0	0	0
Hour	112	11	3	10	2	0	0	138	1	0	0	0	0	0	0	1
11:00	19	3	0	6	2	0	0	30	0	0	0	0	0	0	0	0
11:15	30	3	0	6	1	0	0	40	0	0	0	0	0	0	0	0
11:30	24	2	2	3	0	0	1	32	0	0	0	0	0	0	0	0
11:45	17	4	1	2	1	0	0	25	0	0	0	0	0	0	0	0
Hour	90	12	3	17	4	0	1	127	0	0	0	0	0	0	0	0
12:00	27	2	1	3	0	0	0	33	0	0	0	0	0	0	0	0
12:15	24	7	4	4	0	0	0	39	0	0	0	0	0	0	0	0
12:30	26	3	4	4	0	0	0	37	1	0	0	0	0	0	0	1
12:45	26	4	2	2	1	0	0	35	0	0	0	0	0	0	0	0
Hour	103	16	11	13	1	0	0	144	1	0	0	0	0	0	0	1
13:00	25	7	3	0	0	0	0	35	0	0	0	0	0	0	0	0
13:15	31	5	1	2	0	0	0	39	1	0	0	0	0	0	0	1
13:30	29	1	0	3	0	0	0	33	0	0	0	0	0	0	0	0
13:45	30	5	1	3	1	0	0	40	0	0	0	0	0	0	0	0
Hour	115	18	5	8	1	0	0	147	1	0	0	0	0	0	0	1
14:00	33	9	0	2	1	0	0	45	0	0	0	0	0	0	0	0
14:15	29	1	1	3	0	0	0	34	0	0	0	0	0	0	0	0
14:30	20	5	0	2	0	0	0	27	0	0	0	0	0	0	0	0
14:45	28	5	2	3	0	0	0	38	0	0	0	0	0	0	0	0
Hour	110	20	3	10	1	0	0	144	0	0	0	0	0	0	0	0
15:00	30	7	1	2	1	0	0	41	0	0	0	0	0	0	0	0
15:15	39	5	1	2	0	0	0	47	0	0	0	0	0	0	0	0
15:30	34	9	0	2	3	0	0	48	0	0	0	0	0	0	0	0
15:45	36	5	1	3	2	0	0	47	0	0	0	0	0	0	0	0
Hour	139	26	3	9	6	0	0	183	0	0	0	0	0	0	0	0
16:00	37	9	0	3	1	0	0	50	1	0	0	0	0	0	0	1
16:15	46	8	0	0	0	0	0	54	0	0	0	0	0	0	0	0
16:30	41	6	1	2	2	0	0	52	0	0	0	0	0	0	0	0
16:45	48	6	1	1	0	0	0	56	0	0	0	0	0	0	0	0
Hour	172	29	2	6	3	0	0	212	1	0	0	0	0	0	0	1
17:00	47	8	0	1	1	0	0	57	0	0	0	0	0	0	0	0
17:15	49	6	3	0	0	0	0	58	0	1	0	0	0	0	0	1
17:30	48	11	1	1	0	0	0	61	0	0	0	0	0	0	0	0
17:45	49	9	1	0	0	0	0	59	0	0	0	0	0	0	0	0
Hour	193	34	5	2	1	0	0	235	0	1	0	0	0	0	0	1
18:00	46	4	0	0	0	1	0	51	0	0	0	0	0	0	0	0
18:15	54	4	0	0	1	0	0	59	0	0	0	0	0	0	0	0
18:30	42	6	0	0	0	0	0	48	0	0	0	0	0	0	0	0
18:45	46	12	0	0	1	0	0	59	0	0	0	0	0	0	0	0
Hour	188	26	0	0	2	1	0	217	0	0	0	0	0	0	0	0
Total	1567	230	44	108	33	1	1	1984	6	1	0	0	0	0	0	7

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	D to A - Overbridge to Sliproad Off M1(SB)							Veh. Total	D to B - Overbridge to Donore Road							Veh. Total	Time	D to C - Overbridge to Sliproad Onto M1(SB)							Veh. Total	D to D - Overbridge to Overbridge							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	19	1	0	1	1	0	0	22	07:00	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	16	1	1	0	0	0	0	18	07:15	3	1	0	0	0	1	0	5	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	25	2	2	0	4	0	0	33	07:30	7	0	0	0	2	0	0	9	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	29	4	1	0	2	0	0	36	07:45	7	1	0	2	0	0	0	10	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	89	8	4	1	7	0	0	109	Hour	20	3	0	2	2	1	0	28	0	0	0	0	0	0	0	0
08:00	0	0	0	0	0	0	0	0	28	3	2	0	0	0	0	33	08:00	8	2	0	0	0	0	0	10	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	51	4	0	1	1	0	0	57	08:15	9	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	61	5	2	0	1	1	0	70	08:30	18	3	0	0	0	0	0	21	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	72	6	3	0	2	0	0	83	08:45	14	1	0	0	0	0	0	15	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	212	18	7	1	4	1	0	243	Hour	49	7	0	0	0	0	0	56	0	0	0	0	0	0	0	0
09:00	0	0	0	0	0	0	0	0	45	8	2	2	0	0	1	58	09:00	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	51	8	0	1	2	0	0	62	09:15	6	1	0	0	0	0	0	7	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	31	2	1	0	1	0	0	35	09:30	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	31	4	2	1	0	0	0	38	09:45	4	0	0	0	0	0	0	4	1	0	0	0	0	0	0	1
Hour	0	0	0	0	0	0	0	0	158	22	5	4	3	0	1	193	Hour	17	2	0	0	0	0	0	19	1	0	0	0	0	0	0	1
10:00	0	0	0	0	0	0	0	0	31	3	3	1	0	0	0	38	10:00	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	28	3	0	3	2	0	0	36	10:15	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	29	1	1	0	0	0	0	31	10:30	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	25	4	1	5	2	0	0	37	10:45	3	0	0	0	0	1	0	4	1	0	0	0	0	0	0	1
Hour	0	0	0	0	0	0	0	0	113	11	5	9	4	0	0	142	Hour	9	2	0	0	0	1	0	12	1	0	0	0	0	0	0	1
11:00	0	0	0	0	0	0	0	0	22	7	0	0	1	0	0	30	11:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	26	3	3	0	2	0	0	34	11:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	25	5	2	2	0	0	0	34	11:30	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	21	4	0	2	2	0	1	30	11:45	3	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	94	19	5	4	5	0	1	128	Hour	12	0	0	0	0	1	0	13	0	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0	0	23	3	1	2	0	0	0	29	12:00	2	5	1	0	0	0	0	8	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	19	2	0	1	1	0	0	23	12:15	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	37	4	2	2	1	0	0	46	12:30	1	2	0	0	1	0	0	4	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	24	4	0	0	0	0	0	28	12:45	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	103	13	3	5	2	0	0	126	Hour	7	8	1	0	1	0	0	17	0	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0	0	31	3	1	0	3	0	0	38	13:00	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	28	2	0	1	1	0	0	32	13:15	5	0	0	0	1	0	0	6	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	30	3	1	0	1	0	0	35	13:30	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
13:45	0	0	0	0	0	0	0	0	40	5	1	0	0	0	0	46	13:45	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	129	13	3	1	5	0	0	151	Hour	14	0	0	0	1	0	0	15	0	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0	0	34	6	0	0	1	0	0	41	14:00	11	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	33	6	0	1	1	1	0	42	14:15	0	0	0	2	2	0	0	4	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	30	4	0	1	0	0	0	35	14:30	2	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0
14:45	0	0	0	0	0	0	0	0	33	4	3	0	1	0	0	41	14:45	7	0	0	1	0	0	0	8	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	130	20	3	2	3	1	0	159	Hour	20	0	0	4	2	0	0	26	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	49	4	2	2	1	0	0	58	15:00	5	0	0	0	0	0	0	5	3	0	0	0	0	0	0	3
15:15	0	0	0	0	0	0	0	0	31	4	0	2	3	0	0	40	15:15	7	1	0	0	1	0	0	9	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	35	6	1	0	4	0	0	46	15:30	7	2	0	0	1	0	0	10	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	50	7	0	1	1	0	0	59	15:45	4	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	165	21	3	5	9	0	0	203	Hour	23	5	0	0	2	0	0	30	3	0	0	0	0	0	0	3
16:00	0	0	0	0	0	0	0	0	48	1	0	0	1	0	0	50	16:00	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	39	5	3	0	2	0	0	49	16:15	10	1	0	0	0	0	0	11	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0	46	5	0	1	2	0	0	54	16:30	12	2	0	0	1	0	0	15	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0	45	6	0	1	1	1	0	54	16:45	4	1	0	0	1	0	0	6	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	178	17	3	2	6	1	0	207	Hour	29	5	0	0	2	0	0	36	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	45	7	1	0	1	0	0	54	17:00	6	1	0	0	0	0	0	7	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	43	4	1	0	1	0	0	49	17:15	7	3	1	0	0	0	0	11	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0	40	7	0	1	2	0	0	50	17:30	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	54	6	1	0	1	0	0	62	17:45	7	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	182	24	3	1	5	0	0	215	Hour	24	5	1	0	0	0	0	30	0	0	0	0	0	0	0	0
18:00	0	0	0	0	0	0	0	0	41	3	0	0	5	1	0	50	18:00	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	50	5	0	0	3	0	0	58	18:15	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	40	3	1	0	3	0	0	47	18:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	41	3	0	0	1	0	0	45	18:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	172	14	1	0	12	1	0	200	Hour	12	0	0	0	0	0	0	12	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1725	200	45	35	65	4	2	2076	Total	236	37	2	6	10	3	0	294	5	0	0	0	0	0	0	5

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	To Arm A - Sliproad Off M1(SB)							Veh. Total	From Arm A - Sliproad Off M1(SB)							Veh. Total	Time	To Arm B - Donore Road							Veh. Total	From Arm B - Donore Road							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	39	16	0	6	1	0	0	62	07:00	37	1	0	3	2	0	0	43	58	7	2	2	6	1	0	76
07:15	0	0	0	0	0	0	0	0	45	20	4	10	0	0	0	79	07:15	43	4	4	1	1	0	0	53	54	10	3	5	6	0	1	79
07:30	0	0	0	0	0	0	0	0	45	20	1	5	1	0	0	72	07:30	47	5	3	1	5	0	0	61	79	21	5	6	6	0	0	117
07:45	0	0	0	0	0	0	0	0	77	20	3	0	0	0	0	100	07:45	73	12	1	4	3	0	0	93	77	17	2	4	3	0	0	103
Hour	0	0	0	0	0	0	0	0	206	76	8	21	2	0	0	313	Hour	200	22	8	9	11	0	0	250	268	55	12	17	21	1	1	375
08:00	0	0	0	0	0	0	0	0	60	12	3	2	1	0	0	78	08:00	72	14	4	5	2	0	0	97	63	13	5	5	4	0	0	90
08:15	0	0	0	0	0	0	0	0	78	8	2	1	1	0	0	90	08:15	102	8	1	4	1	0	0	116	54	10	1	5	7	0	0	77
08:30	0	0	0	0	0	0	0	0	96	12	1	3	1	0	0	113	08:30	135	12	3	4	2	1	0	157	66	3	1	2	3	0	0	75
08:45	0	0	0	0	0	0	0	0	119	13	4	4	1	0	0	141	08:45	168	16	9	8	6	0	0	207	68	13	3	2	1	1	0	88
Hour	0	0	0	0	0	0	0	0	353	45	10	10	4	0	0	422	Hour	477	50	17	21	11	1	0	577	251	39	10	14	15	1	0	330
09:00	0	0	0	0	0	0	0	0	92	9	3	5	1	0	0	110	09:00	128	12	4	5	5	0	1	155	53	13	7	4	3	0	0	80
09:15	0	0	0	0	0	0	0	0	53	7	0	6	0	0	0	66	09:15	100	18	2	4	2	0	0	126	64	15	7	5	3	0	0	94
09:30	0	0	0	0	0	0	0	0	39	5	2	4	1	0	0	51	09:30	78	7	1	2	2	0	0	90	54	9	6	6	2	0	0	77
09:45	0	0	0	0	0	0	0	0	24	3	4	6	0	0	0	37	09:45	67	12	4	4	1	0	0	88	47	9	2	1	3	0	0	62
Hour	0	0	0	0	0	0	0	0	208	24	9	21	2	0	0	264	Hour	373	49	11	15	10	0	1	459	218	46	22	16	11	0	0	313
10:00	0	0	0	0	0	0	0	0	23	7	3	2	1	0	0	36	10:00	73	8	4	6	1	0	0	92	61	9	5	3	0	0	0	78
10:15	0	0	0	0	0	0	0	0	30	2	2	4	0	0	0	38	10:15	71	5	1	6	4	0	0	87	71	12	5	2	1	0	0	91
10:30	0	0	0	0	0	0	0	0	23	5	4	5	0	0	0	37	10:30	73	4	5	3	0	0	0	85	59	3	6	7	5	0	0	80
10:45	0	0	0	0	0	0	0	0	34	6	2	6	0	0	0	48	10:45	70	10	1	8	2	0	0	91	76	13	1	5	2	0	0	97
Hour	0	0	0	0	0	0	0	0	110	20	11	17	1	0	0	159	Hour	287	27	11	23	7	0	0	355	267	37	17	17	8	0	0	346
11:00	0	0	0	0	0	0	0	0	22	5	7	7	1	0	0	42	11:00	51	11	4	8	4	0	0	78	69	9	0	7	2	0	0	87
11:15	0	0	0	0	0	0	0	0	37	6	2	6	0	0	0	51	11:15	74	8	4	6	3	0	0	95	74	6	1	5	2	0	0	88
11:30	0	0	0	0	0	0	0	0	24	5	5	6	1	1	0	42	11:30	59	8	6	6	0	0	1	80	57	7	4	8	2	0	0	78
11:45	0	0	0	0	0	0	0	0	29	6	6	4	0	0	0	45	11:45	55	12	4	6	3	0	1	81	68	9	7	7	1	1	0	93
Hour	0	0	0	0	0	0	0	0	112	22	20	23	2	1	0	180	Hour	239	39	18	26	10	0	2	334	268	31	12	27	7	1	0	346
12:00	0	0	0	0	0	0	0	0	27	6	1	2	2	0	0	38	12:00	59	7	2	5	2	0	0	75	79	13	3	6	1	0	0	102
12:15	0	0	0	0	0	0	0	0	34	8	8	4	0	0	0	54	12:15	58	12	9	6	1	0	0	86	89	9	4	5	0	1	0	108
12:30	0	0	0	0	0	0	0	0	26	4	5	3	0	0	0	38	12:30	78	8	9	6	1	0	0	102	85	4	6	8	3	1	0	107
12:45	0	0	0	0	0	0	0	0	27	3	2	1	0	0	0	33	12:45	65	11	3	3	1	0	0	83	79	15	4	5	4	0	0	107
Hour	0	0	0	0	0	0	0	0	114	21	16	10	2	0	0	163	Hour	260	38	23	20	5	0	0	346	332	41	17	24	8	2	0	424
13:00	0	0	0	0	0	0	0	0	15	4	2	2	1	0	0	24	13:00	64	10	4	1	4	0	0	83	90	19	5	3	2	0	1	120
13:15	0	0	0	0	0	0	0	0	38	8	1	8	0	0	0	55	13:15	80	12	1	4	1	0	0	98	74	8	0	6	2	0	0	90
13:30	0	0	0	0	0	0	0	0	28	5	3	7	1	0	0	44	13:30	72	6	3	3	1	0	0	85	87	11	6	2	1	0	0	107
13:45	0	0	0	0	0	0	0	0	30	7	2	9	0	0	0	48	13:45	84	11	3	4	1	0	0	103	80	5	3	5	3	0	0	96
Hour	0	0	0	0	0	0	0	0	111	24	8	26	2	0	0	171	Hour	300	39	11	12	7	0	0	369	331	43	14	16	8	0	1	413
14:00	0	0	0	0	0	0	0	0	28	4	3	4	2	0	0	41	14:00	81	17	2	2	4	0	0	106	63	13	2	3	5	0	0	86
14:15	0	0	0	0	0	0	0	0	19	5	3	6	2	0	0	35	14:15	70	10	3	6	1	1	0	91	52	11	4	2	3	0	0	72
14:30	0	0	0	0	0	0	0	0	23	4	1	4	0	0	0	32	14:30	60	10	0	3	0	0	0	73	83	11	2	2	1	0	0	99
14:45	0	0	0	0	0	0	0	0	34	11	1	2	0	0	0	48	14:45	83	13	5	3	1	0	0	105	66	16	3	6	5	0	0	96
Hour	0	0	0	0	0	0	0	0	104	24	8	16	4	0	0	156	Hour	294	50	10	14	6	1	0	375	264	51	11	13	14	0	0	353
15:00	0	0	0	0	0	0	0	0	35	8	4	3	1	0	0	51	15:00	102	14	4	5	3	0	0	128	75	13	1	2	2	0	0	93
15:15	0	0	0	0	0	0	0	0	25	2	0	4	1	1	0	33	15:15	80	9	1	4	4	1	0	99	87	8	0	6	2	0	0	103
15:30	0	0	0	0	0	0	0	0	32	9	1	1	0	0	0	43	15:30	87	17	1	3	7	0	0	115	85	11	0	5	2	0	0	103
15:45	0	0	0	0	0	0	0	0	22	3	3	4	0	1	0	33	15:45	95	12	1	6	3	1	0	118	98	13	1	4	4	0	0	120
Hour	0	0	0	0	0	0	0	0	114	22	8	12	2	2	0	160	Hour	364	52	7	18	17	2	0	460	345	45	2	17	10	0	0	419
16:00	0	0	0	0	0	0	0	0	34	3	4	2	1	0	0	44	16:00	98	12	2	3	3	0	0	118	99	11	2	2	5	1	0	120
16:15	0	0	0	0	0	0	0	0	42	14	6	8	0	0	0	70	16:15	107	18	6	1	2	0	0	134	104	9	3	6	1	0	0	123
16:30	0	0	0	0	0	0	0	0	48	8	1	4	1	1	0	63	16:30	106	14	2	3	4	0	0	129	110	15	1	3	4	1	0	134
16:45	0	0	0	0	0	0	0	0	52	9	3	3	1	0	0	68	16:45	110	17	1	3	1	1	0	133	115	23	4	4	1	0	0	147
Hour	0	0	0	0	0	0	0	0	176	34	14	17	3	1	0	245	Hour	421	61	11	10	10	1	0	514	428	58	10	15	11	2	0	524
17:00	0	0	0	0	0	0	0	0	50	7	1	5	1	0	0	64	17:00	113	15	1	1	3	0	0	133	170	22	2	2	0	0	0	196
17:15	0	0	0	0	0	0	0	0	65	6	0	1	0	0	0	72	17:15	127	11	4	0	1	0	0	143	146	12	0	1	1	0	0	160
17:30	0	0	0	0	0	0	0	0	50	8	3	4	1	0	0	66	17:30	113	20	1	2	2	0	0	138	157	14	0	0	2	0	0	173
17:45	0	0	0	0	0	0	0	0	39	5	2	2	0	0	0	48	17:45	118	16	2	0	1	0	0	137	128	11	1	3	2	1	0	146
Hour	0	0	0	0	0	0	0	0	204	26	6	12	2	0	0	250	Hour	471	62	8	3	7	0	0	551	601	59	3	6	5	1	0	675
18:00	0	0	0	0	0	0	0	0	39	0	2	0	0	0	0	41	18:00	99	7	0	0	5	2	0	113	133	14	1	0	3	0	0	151
18:15	0	0	0	0	0	0	0	0	38	4	1	3	0	0	0	46	18:15	129	10	0	0	4	0	0	143	118	15	1	1	0	0	0	135
18:30	0	0	0	0	0	0	0	0	33	3	0	1	0	0	0	37	18:30	99	10	2	0	3	0	0	114	96	8	2	0	1	0	0	107
18:45	0	0	0	0	0	0	0	0	38	2	0	2	0	0	0	42	18:45	111	16	0	0	2	0	0	129	92	13	2	0	3	0	0	110
Hour	0	0	0	0	0	0	0	0	148	9	3	6	0	0	0	166	Hour	438	43	2	0	14	2	0	499	439	50	6	1	7	0	0	503
Total	0	0	0	0	0	0	0	0	1960	347	121	191	26	4	0	2649	Total	4124	532	137	171	115	7	3	5089	4012	555	136	183	125	8	2	5021

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	To Arm C - Sliproad Onto M1(SB)							Veh. Total	From Arm C - Sliproad Onto M1(SB)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	84	23	2	7	6	1	0	123	25	3	2	4	0	0	0	34
07:15	90	27	4	15	4	1	0	141	30	2	2	2	1	0	0	37
07:30	104	30	4	9	7	0	0	154	30	3	1	3	0	0	1	38
07:45	132	25	3	6	3	0	0	169	65	5	2	6	1	0	0	79
Hour	410	105	13	37	20	2	0	587	150	13	7	15	2	0	1	188
08:00	98	16	6	7	2	0	0	129	57	9	1	9	1	0	0	77
08:15	106	11	2	5	6	0	0	130	65	7	1	4	1	0	0	78
08:30	122	14	1	4	3	0	0	144	75	7	1	7	1	0	0	91
08:45	131	16	4	3	1	1	0	156	80	5	6	9	3	0	0	103
Hour	457	57	13	19	12	1	0	559	277	28	9	29	6	0	0	349
09:00	86	11	6	8	0	0	0	111	75	4	0	6	4	0	0	89
09:15	81	13	4	9	2	0	0	109	57	8	4	3	0	0	0	72
09:30	55	7	5	8	2	0	0	77	48	4	3	4	0	0	0	59
09:45	44	7	3	6	3	0	0	63	44	9	1	4	1	0	0	59
Hour	266	38	18	31	7	0	0	360	224	25	8	17	5	0	0	279
10:00	54	11	5	5	0	0	0	75	48	9	1	6	1	0	0	65
10:15	63	10	4	4	0	0	0	81	39	4	5	5	2	0	0	55
10:30	48	6	5	9	4	0	0	72	44	3	2	3	0	0	0	52
10:45	54	14	1	8	1	1	0	79	41	5	2	1	0	0	0	49
Hour	219	41	15	26	5	1	0	307	172	21	10	15	3	0	0	221
11:00	52	11	3	10	1	0	0	77	34	9	4	11	2	0	0	60
11:15	61	5	1	7	1	0	0	75	43	8	1	11	2	0	0	65
11:30	50	7	5	9	3	0	0	74	34	5	2	8	0	0	1	50
11:45	58	6	6	8	1	2	0	81	26	8	3	4	1	0	0	42
Hour	221	29	15	34	6	2	0	307	137	30	10	34	5	0	1	217
12:00	66	16	4	7	0	0	0	93	40	5	2	8	0	0	0	55
12:15	64	9	5	7	0	0	0	85	41	9	4	11	0	0	0	65
12:30	53	7	5	11	4	1	0	81	38	6	4	10	0	0	0	58
12:45	56	9	4	4	4	0	0	77	41	9	4	7	1	0	0	62
Hour	239	41	18	29	8	1	0	336	160	29	14	36	1	0	0	240
13:00	53	17	5	3	1	0	0	79	36	11	3	2	0	0	0	52
13:15	62	8	1	11	2	0	0	84	47	7	3	3	0	0	0	60
13:30	57	9	5	8	2	0	0	81	47	2	1	4	0	0	0	54
13:45	54	7	2	12	2	0	0	77	44	10	1	6	1	0	0	62
Hour	226	41	13	34	7	0	0	321	174	30	8	15	1	0	0	228
14:00	64	9	2	6	4	0	0	85	51	13	2	5	1	0	0	72
14:15	41	8	5	8	4	0	0	66	46	2	3	7	0	0	0	58
14:30	55	10	2	7	1	0	0	75	34	7	0	3	1	0	0	45
14:45	54	15	2	7	3	0	0	81	46	6	3	8	1	0	0	64
Hour	214	42	11	28	12	0	0	307	177	28	8	23	3	0	0	239
15:00	60	15	3	4	2	0	0	84	54	14	1	6	2	0	0	77
15:15	68	6	0	8	3	0	0	85	58	10	4	7	0	1	0	80
15:30	68	14	1	5	3	0	0	91	64	20	1	7	3	0	0	95
15:45	77	12	4	5	3	0	0	101	58	9	2	8	2	0	0	79
Hour	273	47	8	22	11	0	0	361	234	53	8	28	7	1	0	331
16:00	68	7	2	3	0	0	0	80	74	19	1	6	1	0	0	101
16:15	90	12	4	11	1	0	0	118	85	20	0	2	0	0	0	107
16:30	95	13	0	6	4	1	0	119	88	28	1	4	2	0	0	123
16:45	88	15	4	5	3	0	0	115	102	28	1	3	0	0	0	134
Hour	341	47	10	25	8	1	0	432	349	95	3	15	3	0	0	465
17:00	95	17	2	6	0	0	0	120	111	30	1	5	1	0	0	148
17:15	103	16	1	2	0	0	0	122	97	24	4	1	0	0	0	126
17:30	98	16	3	3	3	0	0	123	115	29	3	1	0	0	0	148
17:45	71	9	3	5	1	0	0	89	106	24	3	0	0	0	0	133
Hour	367	58	9	16	4	0	0	454	429	107	11	7	1	0	0	555
18:00	98	7	3	0	2	0	0	110	105	9	2	1	0	1	0	118
18:15	81	7	2	4	0	0	0	94	106	13	1	0	1	0	0	121
18:30	58	8	0	1	1	0	0	68	88	13	0	0	0	0	0	101
18:45	66	8	1	2	2	0	0	79	83	24	0	0	2	0	0	109
Hour	303	30	6	7	5	0	0	351	382	59	3	1	3	1	0	449
Total	3536	576	149	308	105	8	0	4682	2865	518	99	235	40	2	2	3761

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 2
Location Sliproad Off M1(SB) / Donore Road / Sliproad Onto M1(SB) / Overbridge
Date Thursday 17 October 2019

Time	To Arm D - Overbridge							Veh. Total	From Arm D - Overbridge							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	23	4	2	3	0	0	0	32	22	2	0	1	1	0	0	26
07:15	15	3	2	1	2	0	1	24	19	2	1	0	0	1	0	23
07:30	35	11	2	4	1	0	1	54	32	2	2	0	6	0	0	42
07:45	50	10	4	2	0	0	0	66	36	5	1	2	2	0	0	46
Hour	123	28	10	10	3	0	2	176	109	11	4	3	9	1	0	137
08:00	46	9	1	4	2	0	0	62	36	5	2	0	0	0	0	43
08:15	49	11	1	2	3	0	0	66	60	5	0	1	1	0	0	67
08:30	59	4	1	4	1	0	0	69	79	8	2	0	1	1	0	91
08:45	54	6	3	4	0	0	0	67	86	7	3	0	2	0	0	98
Hour	208	30	6	14	6	0	0	264	261	25	7	1	4	1	0	299
09:00	56	12	2	4	3	0	0	77	50	9	2	2	0	0	1	64
09:15	50	8	5	2	1	0	0	66	57	9	0	1	2	0	0	69
09:30	41	6	6	4	0	0	0	57	33	2	1	0	1	0	0	37
09:45	40	6	2	2	0	0	0	50	36	4	2	1	0	0	0	43
Hour	187	32	15	12	4	0	0	250	176	24	5	4	3	0	1	213
10:00	38	10	3	1	1	0	0	53	33	4	3	1	0	0	0	41
10:15	36	6	7	4	1	0	0	54	30	3	0	3	2	0	0	38
10:30	36	3	3	3	1	0	0	46	31	2	1	0	0	0	0	34
10:45	56	4	4	1	1	0	0	66	29	4	1	5	2	1	0	42
Hour	166	23	17	9	4	0	0	219	123	13	5	9	4	1	0	155
11:00	48	8	4	7	1	0	0	68	26	7	0	0	1	0	0	34
11:15	46	10	2	9	2	0	0	69	27	3	3	0	2	0	0	35
11:30	35	7	2	9	0	1	0	54	29	5	2	2	0	0	0	38
11:45	34	9	6	3	0	0	0	52	24	4	0	2	2	1	1	34
Hour	163	34	14	28	3	1	0	243	106	19	5	4	5	1	1	141
12:00	46	9	2	6	1	0	0	64	25	8	2	2	0	0	0	37
12:15	63	8	2	8	0	1	0	82	21	3	0	1	1	0	0	26
12:30	56	5	3	6	0	0	0	70	38	6	2	2	2	0	0	50
12:45	52	11	3	6	0	0	0	72	26	4	0	0	0	0	0	30
Hour	217	33	10	26	1	1	0	288	110	21	4	5	3	0	0	143
13:00	57	10	2	3	1	0	1	74	33	3	1	0	3	0	0	40
13:15	50	5	2	3	1	0	0	61	33	2	0	1	2	0	0	38
13:30	66	6	3	2	0	0	0	77	33	3	1	0	1	0	0	38
13:45	60	9	2	4	1	0	0	76	44	5	1	0	0	0	0	50
Hour	233	30	9	12	3	0	1	288	143	13	3	1	6	0	0	166
14:00	42	10	3	4	1	0	0	60	45	6	0	0	1	0	0	52
14:15	39	6	2	4	3	0	0	54	33	6	0	3	3	1	0	46
14:30	57	6	1	1	1	0	0	66	32	4	0	2	0	0	0	38
14:45	49	9	3	7	3	0	0	71	40	4	3	1	1	0	0	49
Hour	187	31	9	16	8	0	0	251	150	20	3	6	5	1	0	185
15:00	59	10	1	4	1	0	0	75	57	4	2	2	1	0	0	66
15:15	60	10	3	7	0	1	0	81	38	5	0	2	4	0	0	49
15:30	68	17	1	5	0	0	0	91	42	8	1	0	5	0	0	56
15:45	60	10	1	6	1	0	0	78	54	9	0	1	1	0	0	65
Hour	247	47	6	22	2	1	0	325	191	26	3	5	11	0	0	236
16:00	92	16	3	4	5	1	0	121	51	2	0	0	1	0	0	54
16:15	83	19	2	4	0	0	0	108	49	6	3	0	2	0	0	60
16:30	103	31	1	3	2	1	0	141	58	7	0	1	3	0	0	69
16:45	120	35	3	3	0	0	0	161	49	7	0	1	2	1	0	60
Hour	398	101	9	14	7	2	0	531	207	22	3	2	8	1	0	243
17:00	174	35	2	5	0	0	0	216	51	8	1	0	1	0	0	61
17:15	128	22	1	1	1	0	0	153	50	7	2	0	1	0	0	60
17:30	155	23	2	1	0	0	0	181	44	8	0	1	2	0	0	55
17:45	145	21	2	0	1	1	0	170	61	6	1	0	1	0	0	69
Hour	602	101	7	7	2	1	0	720	206	29	4	1	5	0	0	245
18:00	125	12	2	1	1	0	0	141	45	3	0	0	5	1	0	54
18:15	108	20	1	0	0	0	0	129	56	5	0	0	3	0	0	64
18:30	101	9	1	0	0	0	0	111	41	3	1	0	3	0	0	48
18:45	78	18	1	0	2	0	0	99	42	3	0	0	1	0	0	46
Hour	412	59	5	1	3	0	0	480	184	14	1	0	12	1	0	212
Total	3143	549	117	171	46	6	3	4035	1966	237	47	41	75	7	2	2375

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	A to B - Access Road to Donore Road(E)							Veh. Total	A to C - Access Road to Drogheda Retail Park							Veh. Total	Time	A to D - Access Road to Donore Road(W)							Veh. Total	A to A - Access Road to Access Road							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	08:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2	Hour	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
09:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	09:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	0	09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	1	2	1	0	0	0	0	4	0	1	0	0	0	0	0	1	Hour	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
10:00	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	10:45	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	2	0	0	1	0	0	0	3	1	0	0	0	0	0	0	1	Hour	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	12:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12:15	4	0	0	0	0	0	0	4	3	0	0	0	0	0	0	3	12:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12:30	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	12:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
12:45	13	1	0	0	0	0	0	14	10	1	0	0	0	0	0	11	12:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	22	1	0	0	0	0	0	23	17	1	0	0	0	0	0	18	Hour	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
13:00	14	0	0	0	0	0	0	14	11	0	0	0	0	0	0	11	13:00	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
13:15	4	1	0	0	0	0	0	5	8	0	0	0	0	0	0	8	13:15	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
13:30	4	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4	13:30	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
13:45	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2	13:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	25	1	0	0	0	0	0	26	25	0	0	0	0	0	0	25	Hour	7	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0
14:00	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	4	14:00	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14:15	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0
14:30	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	14:30	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	14:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	5	0	0	0	0	0	0	5	5	0	0	0	0	0	0	5	Hour	5	2	0	0	0	0	0	7	0	0	0	0	0	0	0	0
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:00	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
15:15	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	15:30	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	2	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	Hour	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:00	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:30	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2	16:30	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0
16:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	16:45	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Hour	4	0	0	0	0	0	0	4	2	0	0	0	0	0	0	2	Hour	11	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0
17:00	3	1	0	0	0	0	0	4	1	0	0	0	0	0	0	1	17:00	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
17:15	2	0	0	0	0	0	0	2	1	0	0	0	0	0	0	1	17:15	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
17:30	7	0	0	0	0	0	0	7	6	0	0	0	0	0	0	6	17:30	20	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0
17:45	10	0	0	0	0	0	0	10	2	0	0	0	0	0	0	2	17:45	13	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0
Hour	22	1	0	0	0	0	0	23	10	0	0	0	0	0	0	10	Hour	44	0	0	0	0	0	0	44	0	0	0	0	0	0	0	0
18:00	4	0	0	0	0	0	0	4	3	0	0	0	0	0	0	3	18:00	11	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0
18:15	2	0	0	0	0	0	0	2	4	0	0	0	0	0	0	4	18:15	4	1	0	0	0	0	0	5	0	0	0	0	0	0	0	0
18:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	18:30	7	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	18:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	7	0	0	0	0	0	0	7	8	0	0	0	0	0	0	8	Hour	23	2	0	0	0	0	0	25	0	0	0	0	0	0	0	0
Total	93	6	1	1	1	0	0	102	71	2	0	0	0	0	0	73	Total	100	6	0	0	0	0	0	106	0	0	0	0	0	0	0	0

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	B to C - Donore Road(E) to Drogheda Retail Park							Veh. Total	B to D - Donore Road(E) to Donore Road(W)							Veh. Total	Time	B to A - Donore Road(E) to Access Road							Veh. Total	B to B - Donore Road(E) to Donore Road(E)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	12	1	1	0	0	0	0	14	55	7	0	1	7	1	0	71	07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	8	0	0	0	0	0	0	8	54	9	3	4	5	0	1	76	07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	5	2	0	0	0	0	0	7	76	21	4	6	7	0	0	114	07:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
07:45	10	5	0	1	0	0	0	16	70	18	2	4	2	0	0	96	07:45	5	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
Hour	35	8	1	1	0	0	0	45	255	55	9	15	21	1	1	357	Hour	5	0	0	0	0	0	0	5	1	0	0	0	0	0	0	1
08:00	15	3	1	0	0	0	0	19	50	13	4	5	5	0	0	77	08:00	4	0	0	0	0	0	0	4	2	0	0	0	0	0	0	2
08:15	18	2	0	1	1	0	0	22	46	8	1	4	5	0	0	64	08:15	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
08:30	18	5	1	0	0	0	0	24	52	3	1	2	2	0	0	60	08:30	9	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0
08:45	19	2	1	0	0	0	0	22	55	11	2	2	1	1	0	72	08:45	6	0	0	0	0	0	0	6	1	0	0	0	0	0	0	1
Hour	70	12	3	1	1	0	0	87	203	35	8	13	13	1	0	273	Hour	25	0	0	0	0	0	0	25	3	0	0	0	0	0	0	3
09:00	54	5	1	0	0	0	0	60	45	8	2	4	3	0	0	62	09:00	8	1	0	0	0	0	0	9	0	0	0	0	0	0	0	0
09:15	36	5	0	0	0	0	0	41	44	12	7	5	3	0	0	71	09:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
09:30	33	2	0	0	2	0	0	37	39	7	6	5	2	0	0	59	09:30	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
09:45	45	1	1	0	0	0	0	47	34	6	2	2	3	0	0	47	09:45	1	1	0	0	0	0	0	2	1	0	0	0	0	0	0	1
Hour	168	13	2	0	2	0	0	185	162	33	17	16	11	0	0	239	Hour	10	2	0	0	0	0	0	12	2	0	0	0	0	0	0	2
10:00	40	3	0	0	0	0	0	43	41	8	2	2	0	0	0	53	10:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
10:15	52	1	0	1	0	0	0	54	48	8	6	1	0	0	0	63	10:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
10:30	34	3	0	0	1	1	0	39	38	2	4	3	5	0	0	52	10:30	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0	3
10:45	59	3	1	0	0	0	0	63	45	8	1	3	2	0	0	59	10:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hour	185	10	1	1	1	1	0	199	172	26	13	9	7	0	0	227	Hour	2	0	0	0	0	0	0	2	6	0	0	0	0	0	0	6
11:00	65	3	1	0	0	0	0	69	40	9	0	5	2	0	0	56	11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	58	3	0	0	2	0	0	63	42	5	1	4	2	0	0	54	11:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
11:30	63	5	1	0	0	1	0	70	37	7	5	8	2	0	0	59	11:30	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
11:45	50	5	1	0	0	0	0	56	40	4	5	6	1	0	0	56	11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	236	16	3	0	2	1	0	258	159	25	11	23	7	0	0	225	Hour	0	1	0	0	0	0	0	1	2	0	0	0	0	0	0	2
12:00	76	2	1	0	0	0	0	79	50	9	3	4	1	0	0	67	12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	62	1	0	0	1	1	1	66	56	8	2	3	0	0	0	69	12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	54	1	1	0	0	0	0	56	49	5	5	6	4	1	0	70	12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	62	5	0	0	0	0	0	67	47	11	3	3	3	0	0	67	12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	254	9	2	0	1	1	1	268	202	33	13	16	8	1	0	273	Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:00	69	6	0	0	0	0	0	75	57	15	4	2	3	0	1	82	13:00	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0
13:15	68	6	2	0	1	0	0	77	39	6	0	5	1	0	0	51	13:15	6	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0
13:30	63	2	1	0	0	1	0	67	50	8	3	2	1	0	0	64	13:30	8	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0
13:45	55	4	0	0	1	0	0	60	46	4	0	5	3	0	0	58	13:45	9	1	0	0	0	0	0	10	0	0	0	0	0	0	0	0
Hour	255	18	3	0	2	1	0	279	192	33	7	14	8	0	1	255	Hour	23	2	0	0	0	0	0	25	0	0	0	0	0	0	0	0
14:00	72	1	0	0	0	0	0	73	39	8	2	2	5	0	0	56	14:00	3	0	0	0	0	0	0	3	1	0	0	0	0	0	0	1
14:15	55	4	1	0	0	0	0	60	30	9	2	3	3	0	0	47	14:15	3	0	0	0	0	0	0	3	0	1	0	0	0	0	0	1
14:30	55	5	0	0	1	0	0	61	42	10	1	2	1	0	0	56	14:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
14:45	66	3	0	0	0	0	0	69	46	7	3	5	5	0	0	66	14:45	1	0	0	0	0	0	0	1	2	1	0	0	0	0	0	3
Hour	248	13	1	0	1	0	0	263	157	34	8	12	14	0	0	225	Hour	8	0	0	0	0	0	0	8	3	2	0	0	0	0	0	5
15:00	57	4	1	0	1	0	0	63	33	9	1	1	2	0	0	46	15:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
15:15	54	4	0	0	0	0	0	58	55	3	0	6	2	0	0	66	15:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
15:30	54	4	0	0	2	0	1	61	44	7	0	2	2	0	0	55	15:30	2	0	0	0	0	0	0	2	1	1	0	0	0	0	0	2
15:45	47	8	1	0	0	0	0	56	51	7	1	3	4	0	0	66	15:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
Hour	212	20	2	0	3	0	1	238	183	26	2	12	10	0	0	233	Hour	4	0	0	0	0	0	0	4	3	1	0	0	0	0	0	4
16:00	60	2	0	0	0	0	0	62	60	9	0	2	3	0	0	74	16:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:15	62	4	0	0	0	0	0	66	60	5	2	4	1	0	0	72	16:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16:30	53	4	1	0	1	0	0	59	72	6	1	3	4	1	0	87	16:30	1	0	0	0	0	0	0	1	3	0	0	0	0	0	0	3
16:45	55	3	0	0	0	0	0	58	68	17	4	2	1	0	0	92	16:45	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
Hour	230	13	1	0	1	0	0	245	260	37	7	11	9	1	0	325	Hour	3	0	0	0	0	0	0	3	7	0	0	0	0	0	0	7
17:00	64	6	0	0	0	0	0	70	88	11	1	2	0	0	0	102	17:00	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
17:15	43	4	0	0	0	0	0	47	80	7	0	1	1	0	0	89	17:15	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2
17:30	63	9	0	0	2	0	0	74	94	8	0	0	2	0	0	104	17:30	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	3
17:45	50	3	0	0	0	0	0	53	79	4	0	2	1	1	0	87	17:45	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
Hour	220	22	0	0	2	0	0	244	341	30	1	5	4	1	0	382	Hour	1	0	0	0	0	0	0	1	9	0	0	0	0	0	0	9
18:00	46	0	0	0	0	1	1	48	77	10	1	0	3	0	0	91	18:00	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
18:15	58	0	0	0	1	1	0	60	80	8	2	1	0	0	0	91	18:15	1	0	0	0	0	0	0	1	2	0	0	0	0	0	0	2
18:30	48	4	0	0	0	0	0	52	54	6	2	0	1	0	0	63	18:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
18:45	42	2	0	0	0	0	0	44	53	10	0	0	3	0	0	66	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hour	194	6	0	0	1	2	1	204	264	34	5	1	7	0	0	311	Hour	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3
Total	2307	160	19	3	17	6	3	2515	2550	401	101	147	119	5	2	3325	Total	84	5	0	0	0	0	0	89	39	3	0	0	0	0	0	42

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	C to D - Drogheda Retail Park to Donore Road(W)							Veh. Total	C to A - Drogheda Retail Park to Access Road							Veh. Total	Time	C to B - Drogheda Retail Park to Donore Road(E)							Veh. Total	C to C - Drogheda Retail Park to Drogheda Retail Park							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	4	0	2	1	0	0	0	7	0	0	0	0	0	0	0	0	07:00	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	07:15	5	1	0	0	1	0	0	7	0	0	0	0	0	0	0	0
07:30	3	1	0	0	0	0	0	4	0	0	0	0	0	0	0	0	07:30	2	2	0	0	0	0	0	4	0	0	0	0	0	0	0	0
07:45	4	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	07:45	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Hour	11	1	2	1	0	0	0	15	1	0	0	0	0	0	0	1	Hour	13	3	0	0	1	0	0	17	0	0	0	0	0	0	0	0
08:00	7	0	1	0	0	0	0	8	3	0	0	0	0	0	0	3	08:00	4	2	0	0	0	0	0	6	1	0	0	0	0	0	0	1
08:15	5	2	0	1	1	0	0	9	1	0	0	0	0	0	0	1	08:15	6	2	0	0	0	0	0	8	0	0	0	0	0	0	0	0
08:30	10	1	0	0	1	0	0	12	2	0	0	0	0	0	0	2	08:30	11	2	0	0	0	0	0	13	0	0	0	0	0	0	0	0
08:45	9	3	1	0	0	0	0	13	5	0	0	0	0	0	0	5	08:45	14	2	1	0	0	0	0	17	0	0	0	0	0	0	0	0
Hour	31	6	2	1	2	0	0	42	11	0	0	0	0	0	0	11	Hour	35	8	1	0	0	0	0	44	1	0	0	0	0	0	0	1
09:00	5	4	4	0	0	0	0	13	10	0	0	0	0	0	0	10	09:00	7	4	0	0	0	0	0	11	0	0	0	0	0	0	0	0
09:15	17	3	0	0	0	0	0	20	0	0	0	0	0	0	0	0	09:15	24	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0
09:30	15	1	0	1	0	0	0	17	0	1	0	0	0	0	0	1	09:30	22	2	1	0	0	0	0	25	0	0	0	0	0	0	0	0
09:45	11	0	1	0	0	0	0	12	0	0	1	0	0	0	0	1	09:45	40	4	1	0	0	0	0	45	0	0	0	0	0	0	0	0
Hour	48	8	5	1	0	0	0	62	10	1	1	0	0	0	0	12	Hour	93	10	2	0	0	0	0	105	0	0	0	0	0	0	0	0
10:00	17	3	1	1	0	0	0	22	1	0	0	0	0	0	0	1	10:00	29	3	0	0	0	1	0	33	0	1	0	0	0	0	0	1
10:15	20	4	1	0	1	0	0	26	0	0	0	0	0	0	0	0	10:15	22	3	1	0	0	0	0	26	0	0	0	0	0	0	0	0
10:30	22	2	2	4	0	0	0	30	0	0	0	0	0	0	0	0	10:30	29	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0
10:45	30	0	0	2	0	0	0	32	2	0	0	0	0	0	0	2	10:45	31	1	2	0	0	0	0	34	0	0	0	1	0	0	0	1
Hour	89	9	4	7	1	0	0	110	3	0	0	0	0	0	0	3	Hour	111	7	3	0	0	1	0	122	0	1	0	1	0	0	0	2
11:00	30	0	0	2	0	0	0	32	0	0	0	0	0	0	0	0	11:00	31	2	0	0	0	0	0	33	0	0	0	0	0	0	0	0
11:15	27	2	0	1	0	0	0	30	1	0	0	0	0	0	0	1	11:15	39	3	0	0	1	0	0	43	0	0	0	0	0	0	0	0
11:30	20	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	11:30	36	4	2	0	0	0	0	42	2	1	0	0	0	0	0	3
11:45	29	4	2	1	0	1	0	37	0	0	0	0	0	0	0	0	11:45	48	1	0	1	0	0	0	50	0	0	0	0	0	0	0	0
Hour	106	6	2	4	0	1	0	119	1	0	0	0	0	0	0	1	Hour	154	10	2	1	1	0	0	168	2	1	0	0	0	0	0	3
12:00	29	4	0	2	0	0	0	35	0	0	0	0	0	0	0	0	12:00	37	5	2	1	1	0	0	46	1	0	0	0	0	0	0	1
12:15	41	1	1	3	0	1	0	47	0	0	0	0	0	0	0	0	12:15	45	2	1	0	0	0	0	48	0	0	0	0	0	0	0	0
12:30	29	0	1	1	0	0	0	31	2	0	0	0	0	0	0	2	12:30	48	0	0	0	0	0	0	48	1	0	0	0	0	0	0	1
12:45	32	3	1	2	0	0	0	38	5	0	0	0	0	0	0	5	12:45	62	2	1	0	1	1	1	68	0	0	0	0	0	0	0	0
Hour	131	8	3	8	0	1	0	151	7	0	0	0	0	0	0	7	Hour	192	9	4	1	2	1	1	210	2	0	0	0	0	0	0	2
13:00	26	3	1	0	0	0	0	30	2	0	0	0	0	0	0	2	13:00	62	4	1	0	0	0	0	67	1	0	0	0	0	0	0	1
13:15	30	1	0	1	0	0	0	32	9	0	0	0	0	0	0	9	13:15	51	5	1	0	0	0	0	57	0	1	0	0	0	0	0	1
13:30	30	2	3	0	0	0	0	35	6	0	0	0	0	0	0	6	13:30	50	5	0	0	0	0	0	55	0	0	0	0	0	0	0	0
13:45	28	2	3	0	0	0	0	33	9	0	0	0	0	0	0	9	13:45	47	2	0	0	0	1	0	50	0	0	0	0	0	0	0	0
Hour	114	8	7	1	0	0	0	130	26	0	0	0	0	0	0	26	Hour	210	16	2	0	0	1	0	229	1	1	0	0	0	0	0	2
14:00	22	5	0	1	0	0	0	28	7	0	0	0	0	0	0	7	14:00	52	3	0	0	0	0	0	55	0	0	0	0	0	0	0	0
14:15	16	2	1	0	0	0	0	19	2	1	0	0	0	0	0	3	14:15	46	3	0	0	0	0	0	49	0	0	0	0	0	0	0	0
14:30	40	2	0	0	0	0	0	42	5	0	0	0	0	0	0	5	14:30	47	4	0	0	0	0	0	51	0	0	0	0	0	0	0	0
14:45	19	7	1	1	0	0	0	28	0	0	0	0	0	0	0	0	14:45	40	5	0	0	0	0	0	45	0	0	0	0	0	0	0	0
Hour	97	16	2	2	0	0	0	117	14	1	0	0	0	0	0	15	Hour	185	15	0	0	0	0	0	200	0	0	0	0	0	0	0	0
15:00	34	5	0	1	0	0	0	40	0	0	0	0	0	0	0	0	15:00	53	2	0	0	0	0	0	55	0	0	0	0	0	0	0	0
15:15	32	5	0	0	0	0	0	37	0	0	0	0	0	0	0	0	15:15	43	6	0	0	0	0	0	49	0	0	0	0	0	0	0	0
15:30	35	4	0	2	0	0	0	41	0	0	0	0	0	0	0	0	15:30	54	1	0	0	0	0	0	55	0	0	0	0	0	0	0	0
15:45	37	6	0	0	0	0	0	43	0	0	0	0	0	0	0	0	15:45	44	3	0	0	0	0	0	47	0	0	0	0	0	0	0	0
Hour	138	20	0	3	0	0	0	161	0	0	0	0	0	0	0	0	Hour	194	12	0	0	0	0	0	206	0	0	0	0	0	0	0	0
16:00	33	1	2	1	2	1	0	40	2	0	0	0	0	0	0	2	16:00	32	5	0	0	0	0	0	37	0	0	0	0	0	0	0	0
16:15	39	5	1	1	0	0	0	46	0	0	0	0	0	0	0	0	16:15	35	7	0	0	0	0	0	42	0	0	0	0	0	0	0	0
16:30	44	8	0	0	0	0	0	52	0	0	0	0	0	0	0	0	16:30	55	1	1	0	0	0	0	57	0	1	0	0	0	0	0	1
16:45	40	6	1	2	0	0	0	49	0	0	0	0	0	0	0	0	16:45	52	4	1	0	0	0	0	57	0	0	0	0	0	0	0	0
Hour	156	20	4	4	2	1	0	187	2	0	0	0	0	0	0	2	Hour	174	17	2	0	0	0	0	193	0	1	0	0	0	0	0	1
17:00	62	9	1	0	0	0	0	72	0	1	0	0	0	0	0	1	17:00	55	2	0	0	0	0	0	57	0	0	0	0	0	0	0	0
17:15	58	3	0	0	0	0	0	61	0	0	0	0	0	0	0	0	17:15	43	1	0	0	0	0	0	44	0	1	0	0	0	0	0	1
17:30	52	7	0	0	0	0	0	59	0	0	0	0	0	0	0	0	17:30	37	2	0	0	0	0	0	39	0	0	0	0	0	0	0	0
17:45	40	4	1	1	1	0	0	47	0	0	0	0	0	0	0	0	17:45	50	1	1	0	0	0	0	52	0	0	0	0	0	0	0	0
Hour	212	23	2	1	1	0	0	239	0	1	0	0	0	0	0	1	Hour	185	6	1	0	0	0	0	192	0	1	0	0	0	0	0	1
18:00	48	4	0	0	0	0	0	52	1	0	0	0	0	0	0	1	18:00	49	1	0	0	0	0	0	50	1	0	0	0	0	0	0	1
18:15	30	4	1	0	0	0	0	35	0	0	0	0	0	0	0	0	18:15	39	1	0	0	0	0	1	41	0	0	0	0	0	0	0	0
18:30	30	1	0	0	0	0	0	31	0	0	0	0	0	0	0	0	18:30	38	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0
18:45	35	6	1	0	0	0	0	42	0	0	0	0	0	0	0	0	18:45	51	4	0	0	0	0	0	55	0	0	0	0	0	0	0	0
Hour	143	15	2	0	0	0	0	160	1	0	0	0	0	0	0	1	Hour	177	6	0	0	0	0	1	184	1	0	0	0	0	0	0	1
Total	1276	140	35	33	6	3	0	1493	76	3	1	0	0	0	0	80	Total	1723	119	17	2	4	3	2	1870	7	5	0	1	0	0	0	13

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	D to A - Donore Road(W) to Access Road							Veh. Total	D to B - Donore Road(W) to Donore Road(E)							Veh. Total	Time	D to C - Donore Road(W) to Drogheda Retail Park							Veh. Total	D to D - Donore Road(W) to Donore Road(W)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	1	0	0	0	0	0	0	1	36	0	0	3	2	0	0	41	07:00	4	0	0	0	0	0	0	4	2	0	0	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	37	3	4	1	1	0	0	46	07:15	7	1	0	0	0	0	0	8	0	0	0	0	0	0	0	0
07:30	1	0	0	0	1	0	0	2	45	6	3	1	4	0	1	60	07:30	3	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
07:45	2	0	0	0	0	0	0	2	60	9	2	4	3	0	1	79	07:45	9	3	0	0	0	0	0	12	0	0	0	0	0	0	0	0
Hour	4	0	0	0	1	0	0	5	178	18	9	9	10	0	2	226	Hour	23	4	0	0	0	0	0	27	2	0	0	0	0	0	0	2
08:00	8	0	0	0	0	0	0	8	55	10	2	5	2	0	0	74	08:00	17	4	2	0	0	0	0	23	0	0	0	0	0	0	0	0
08:15	8	0	0	0	0	0	0	8	71	9	2	2	1	0	0	85	08:15	34	0	0	1	0	0	0	35	1	0	0	0	0	0	0	1
08:30	4	0	0	0	0	0	0	4	97	12	1	4	2	0	0	116	08:30	37	3	2	1	0	1	0	44	0	0	0	0	0	0	0	0
08:45	25	0	0	0	0	0	0	25	108	13	9	6	6	0	0	142	08:45	42	4	0	1	0	0	0	47	1	0	0	0	0	0	0	1
Hour	45	0	0	0	0	0	0	45	331	44	14	17	11	0	0	417	Hour	130	11	4	3	0	1	0	149	2	0	0	0	0	0	0	2
09:00	27	1	0	0	0	0	0	28	74	6	4	3	5	0	1	93	09:00	43	8	1	2	0	0	0	54	0	0	0	0	0	0	0	0
09:15	8	0	0	0	0	0	0	8	64	10	2	2	2	0	0	80	09:15	34	4	0	2	0	0	0	40	0	0	0	0	0	0	0	0
09:30	5	0	0	0	0	0	0	5	53	6	2	1	2	0	0	64	09:30	19	2	0	0	0	0	0	21	0	0	0	0	0	0	0	0
09:45	0	1	0	0	0	0	0	1	52	11	4	3	1	0	0	71	09:45	22	2	1	1	0	0	0	26	0	0	0	0	0	0	0	0
Hour	40	2	0	0	0	0	0	42	243	33	12	9	10	0	1	308	Hour	118	16	2	5	0	0	0	141	0	0	0	0	0	0	0	0
10:00	2	0	0	1	0	0	0	3	53	6	2	3	1	0	0	65	10:00	18	1	3	2	0	0	0	24	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	43	5	1	5	4	0	0	58	10:15	21	2	1	1	0	0	0	25	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	0	46	3	4	2	0	0	0	55	10:30	30	2	0	1	0	0	0	33	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	36	8	1	6	2	0	0	53	10:45	31	2	0	2	0	0	0	35	0	0	0	0	0	0	0	0
Hour	2	0	0	1	0	0	0	3	178	22	8	16	7	0	0	231	Hour	100	7	4	6	0	0	0	117	0	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0	0	31	8	2	4	3	0	0	48	11:00	24	1	2	3	0	0	0	30	0	1	0	0	0	0	0	1
11:15	0	0	0	0	0	0	0	0	44	8	3	5	4	0	0	64	11:15	33	2	0	1	0	0	0	36	0	0	0	0	0	0	0	0
11:30	0	0	0	0	0	0	0	0	32	4	2	4	0	0	0	42	11:30	44	4	2	1	0	0	0	51	1	0	0	0	0	0	0	1
11:45	0	0	0	0	0	0	0	0	27	11	2	3	3	0	1	47	11:45	28	2	2	3	0	0	0	35	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	134	31	9	16	10	0	1	201	Hour	129	9	6	8	0	0	0	152	1	1	0	0	0	0	0	2
12:00	0	0	0	0	0	0	0	0	37	7	2	5	1	0	0	52	12:00	25	2	0	1	1	0	0	29	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	32	10	9	6	1	0	0	58	12:15	29	1	0	0	0	0	0	30	1	0	0	0	0	0	0	1
12:30	0	0	0	0	0	0	0	0	48	6	5	7	1	0	0	67	12:30	31	2	3	0	0	0	0	36	2	0	0	0	0	0	0	2
12:45	1	0	0	0	0	0	0	1	38	9	1	3	1	0	0	52	12:45	28	1	2	0	0	0	0	31	1	0	0	0	0	0	0	1
Hour	1	0	0	0	0	0	0	1	155	32	17	21	4	0	0	229	Hour	113	6	5	1	1	0	0	126	4	0	0	0	0	0	0	4
13:00	0	0	0	0	0	0	0	0	46	6	2	0	4	0	0	58	13:00	20	2	2	1	0	0	0	25	0	0	0	0	0	0	0	0
13:15	1	0	0	0	0	0	0	1	50	8	0	2	1	0	0	61	13:15	28	2	1	2	0	0	0	33	0	0	0	0	0	0	0	0
13:30	2	0	0	0	0	0	0	2	43	5	2	2	1	0	0	53	13:30	20	1	1	0	0	0	0	22	0	0	0	0	0	0	0	0
13:45	1	0	0	0	0	0	0	1	44	6	3	4	1	0	0	58	13:45	38	5	0	1	0	0	0	44	1	0	0	0	0	0	0	1
Hour	4	0	0	0	0	0	0	4	183	25	7	8	7	0	0	230	Hour	106	10	4	4	0	0	0	124	1	0	0	0	0	0	0	1
14:00	1	0	0	0	0	0	0	1	59	15	2	2	4	0	0	82	14:00	25	2	0	0	0	0	0	27	0	0	0	0	0	0	0	0
14:15	5	1	0	0	0	0	0	6	50	6	2	5	1	0	0	64	14:15	15	4	0	1	0	1	0	21	0	0	0	0	0	0	0	0
14:30	0	0	0	0	0	0	0	0	39	8	0	2	0	0	0	49	14:30	20	4	0	1	0	0	0	25	0	0	0	0	0	0	0	0
14:45	1	1	0	0	0	0	0	2	53	9	3	2	1	0	0	68	14:45	28	3	1	1	0	0	0	33	0	0	0	0	0	0	0	0
Hour	7	2	0	0	0	0	0	9	201	38	7	11	6	0	0	263	Hour	88	13	1	3	0	1	0	106	0	0	0	0	0	0	0	0
15:00	2	0	0	0	0	0	0	2	62	5	3	4	3	0	0	77	15:00	36	8	0	1	0	0	0	45	0	0	0	0	0	0	0	0
15:15	1	0	0	0	0	0	0	1	47	7	2	4	4	1	0	65	15:15	36	2	0	0	0	0	0	38	0	0	0	0	0	0	0	0
15:30	0	0	0	0	0	0	0	0	55	12	1	3	6	0	0	77	15:30	32	3	0	0	0	0	0	35	2	0	0	0	0	0	0	2
15:45	1	0	0	0	0	0	0	1	62	11	1	5	4	1	0	84	15:45	27	2	0	1	0	0	0	30	0	0	0	0	0	0	0	0
Hour	4	0	0	0	0	0	0	4	226	35	7	16	17	2	0	303	Hour	131	15	0	2	0	0	0	148	2	0	0	0	0	0	0	2
16:00	0	0	0	0	0	0	0	0	71	12	2	3	3	0	0	91	16:00	25	1	0	0	0	0	0	26	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0	74	11	3	1	2	0	0	91	16:15	21	5	2	0	0	0	0	28	1	0	0	0	0	0	0	1
16:30	1	0	0	0	0	0	0	1	77	12	4	3	4	0	0	100	16:30	22	3	0	0	0	0	0	25	0	0	0	0	0	0	0	0
16:45	1	0	0	0	0	0	0	1	78	13	0	2	0	1	0	94	16:45	28	2	0	1	0	0	0	31	0	1	0	0	0	0	0	1
Hour	2	0	0	0	0	0	0	2	300	48	9	9	9	1	0	376	Hour	96	11	2	1	0	0	0	110	1	1	0	0	0	0	0	2
17:00	1	0	0	0	0	0	0	1	88	12	0	1	4	0	0	105	17:00	29	5	1	0	0	0	0	35	0	0	0	0	0	0	0	0
17:15	1	0	0	0	0	0	0	1	87	7	4	0	1	0	0	99	17:15	28	3	0	0	0	0	0	31	0	1	0	0	0	0	0	1
17:30	0	0	0	0	0	0	0	0	89	17	1	2	2	0	0	111	17:30	32	1	0	0	0	0	0	33	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	94	13	1	0	1	0	0	109	17:45	19	2	1	0	0	0	0	22	0	0	0	0	0	0	0	0
Hour	2	0	0	0	0	0	0	2	358	49	6	3	8	0	0	424	Hour	108	11	2	0	0	0	0	121	0	1	0	0	0	0	0	1
18:00	0	0	0	0	0	0	0	0	81	6	0	0	5	2	0	94	18:00	11	2	0	0	0	0	0	13	0	0	0	0	0	0	0	0
18:15	0	0	0	0	0	0	0	0	89	8	0	0	4	0	0	101	18:15	14	3	0	0	0	0	0	17	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	81	7	1	0	3	0	0	92	18:30	16	1	1	0	0	0	0	18	0	0	0	0	0	0	0	0
18:45	0	0	0	0	0	0	0	0	98	10	0	0	2	0	0	110	18:45	11	5	1	0	0	0	0	17	0	0	0	0	0	0	0	0
Hour	0	0	0	0	0	0	0	0	349	31	1	0	14	2	0	397	Hour	52	11	2	0	0	0	0	65	0	0	0	0	0	0	0	0
Total	111	4	0	1	1	0	0	117	2836	406	106	135	113	5	4	3605	Total	1194	124	32	33	1	2	0	1386	13	3	0	0	0	0	0	16

10569 / Drogheda Retail Park
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Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	To Arm A - Access Road							Veh. Total	From Arm A - Access Road							Veh. Total	Time	To Arm B - Donore Road(E)							Veh. Total	From Arm B - Donore Road(E)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C			CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	07:00	39	0	0	3	2	0	0	44	67	8	1	1	7	1	0	85
07:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	07:15	42	4	4	1	2	0	0	53	62	9	3	4	5	0	1	84
07:30	1	0	0	0	1	0	0	2	0	0	0	0	0	0	0	0	07:30	48	8	3	1	4	0	1	65	82	23	4	6	7	0	0	122
07:45	7	0	0	0	0	0	0	7	0	0	0	0	1	0	0	1	07:45	63	9	2	4	4	0	1	83	85	23	2	5	2	0	0	117
Hour	10	0	0	0	1	0	0	11	0	0	0	0	1	0	0	1	Hour	192	21	9	9	12	0	2	245	296	63	10	16	21	1	1	408
08:00	15	0	0	0	0	0	0	15	3	0	0	0	0	0	0	3	08:00	62	12	2	5	2	0	0	83	71	16	5	5	5	0	0	102
08:15	15	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	08:15	77	11	2	2	1	0	0	93	70	10	1	5	6	0	0	92
08:30	15	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	08:30	108	14	1	4	2	0	0	129	79	8	2	2	2	0	0	93
08:45	36	0	0	0	0	0	0	36	1	0	0	0	0	0	0	1	08:45	123	15	10	6	6	0	0	160	81	13	3	2	1	1	0	101
Hour	81	0	0	0	0	0	0	81	4	0	0	0	0	0	0	4	Hour	370	52	15	17	11	0	0	465	301	47	11	14	14	1	0	388
09:00	45	2	0	0	0	0	0	47	1	0	0	0	0	0	0	1	09:00	82	10	4	3	5	0	1	105	107	14	3	4	3	0	0	131
09:15	9	0	0	0	0	0	0	9	1	1	0	0	0	0	0	2	09:15	88	10	2	2	2	0	0	104	81	17	7	5	3	0	0	113
09:30	5	1	0	0	0	0	0	6	0	0	0	0	0	0	0	0	09:30	76	8	3	1	2	0	0	90	73	9	6	5	4	0	0	97
09:45	1	2	1	0	0	0	0	4	0	2	1	0	0	0	0	3	09:45	93	17	6	3	1	0	0	120	81	8	3	2	3	0	0	97
Hour	60	5	1	0	0	0	0	66	2	3	1	0	0	0	0	6	Hour	339	45	15	9	10	0	1	419	342	48	19	16	13	0	0	438
10:00	3	0	0	1	0	0	0	4	0	0	0	1	0	0	0	1	10:00	84	9	2	4	1	1	0	101	83	11	2	2	0	0	0	98
10:15	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	10:15	67	8	2	5	4	0	0	86	101	9	6	2	0	0	0	118
10:30	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	10:30	78	3	4	2	0	0	0	87	76	5	4	3	6	1	0	95
10:45	3	0	0	0	0	0	0	3	2	1	0	0	0	0	0	3	10:45	68	9	3	6	2	0	0	88	105	11	2	3	2	0	0	123
Hour	7	0	0	1	0	0	0	8	3	1	0	1	0	0	0	5	Hour	297	29	11	17	7	1	0	362	365	36	14	10	8	1	0	434
11:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	11:00	62	10	2	4	3	0	0	81	105	12	1	5	2	0	0	125
11:15	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	11:15	85	11	3	5	5	0	0	109	102	8	1	4	4	0	0	119
11:30	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	1	11:30	69	8	4	4	0	0	0	85	100	13	6	8	2	1	0	130
11:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	11:45	76	12	2	4	3	0	1	98	90	9	6	6	1	0	0	112
Hour	1	1	0	0	0	0	0	2	3	0	0	0	0	0	0	3	Hour	292	41	11	17	11	0	1	373	397	42	14	23	9	1	0	486
12:00	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4	12:00	76	12	4	6	2	0	0	100	126	11	4	4	1	0	0	146
12:15	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0	8	12:15	81	12	10	6	1	0	0	110	118	9	2	3	1	1	1	135
12:30	2	0	0	0	0	0	0	2	7	0	0	0	0	0	0	7	12:30	99	6	5	7	1	0	0	118	103	6	6	6	4	1	0	126
12:45	6	0	0	0	0	0	0	6	24	2	0	0	0	0	0	26	12:45	113	12	2	3	2	1	1	134	109	16	3	3	3	0	0	134
Hour	8	0	0	0	0	0	0	8	43	2	0	0	0	0	0	45	Hour	369	42	21	22	6	1	1	462	456	42	15	16	9	2	1	541
13:00	2	1	0	0	0	0	0	3	28	0	0	0	0	0	0	28	13:00	122	10	3	0	4	0	0	139	126	22	4	2	3	0	1	158
13:15	16	0	0	0	0	0	0	16	13	2	0	0	0	0	0	15	13:15	105	14	1	2	1	0	0	123	113	12	2	5	2	0	0	134
13:30	16	0	0	0	0	0	0	16	10	0	0	0	0	0	0	10	13:30	97	10	2	2	1	0	0	112	121	10	4	2	1	1	0	139
13:45	19	1	0	0	0	0	0	20	6	0	0	0	0	0	0	6	13:45	94	8	3	4	1	1	0	111	110	9	0	5	4	0	0	128
Hour	53	2	0	0	0	0	0	55	57	2	0	0	0	0	0	59	Hour	418	42	9	8	7	1	0	485	470	53	10	14	10	1	1	559
14:00	11	0	0	0	0	0	0	11	9	0	0	0	0	0	0	9	14:00	114	18	2	2	4	0	0	140	115	9	2	2	5	0	0	133
14:15	10	2	0	0	0	0	0	12	1	1	0	0	0	0	0	2	14:15	96	10	2	5	1	0	0	114	88	14	3	3	3	0	0	111
14:30	6	0	0	0	0	0	0	6	3	1	0	0	0	0	0	4	14:30	88	12	0	2	0	0	0	102	98	15	1	2	2	0	0	118
14:45	2	1	0	0	0	0	0	3	2	0	0	0	0	0	0	2	14:45	96	15	3	2	1	0	0	117	115	11	3	5	5	0	0	139
Hour	29	3	0	0	0	0	0	32	15	2	0	0	0	0	0	17	Hour	394	55	7	11	6	0	0	473	416	49	9	12	15	0	0	501
15:00	3	0	0	0	0	0	0	3	2	0	0	0	0	0	0	2	15:00	115	7	3	4	3	0	0	132	91	13	2	1	3	0	0	110
15:15	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	15:15	92	13	2	4	4	1	0	116	110	7	0	6	2	0	0	125
15:30	2	0	0	0	0	0	0	2	2	1	0	0	0	0	0	3	15:30	110	15	1	3	6	0	0	135	101	12	0	2	4	0	1	120
15:45	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	15:45	108	14	1	5	4	1	0	133	100	15	2	3	4	0	0	124
Hour	8	0	0	0	0	0	0	8	6	1	0	0	0	0	0	7	Hour	425	49	7	16	17	2	0	516	402	47	4	12	13	0	1	479
16:00	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	16:00	103	17	2	3	3	0	0	128	121	11	0	2	3	0	0	137
16:15	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	16:15	109	18	3	1	2	0	0	133	123	9	2	4	1	0	0	139
16:30	2	0	0	0	0	0	0	2	9	0	0	0	0	0	0	9	16:30	138	13	5	3	4	0	0	163	129	10	2	3	5	1	0	150
16:45	1	0	0	0	0	0	0	1	4	0	0	0	0	0	0	4	16:45	135	17	1	2	0	1	0	156	127	20	4	2	1	0	0	154
Hour	7	0	0	0	0	0	0	7	17	0	0	0	0	0	0	17	Hour	485	65	11	9	9	1	0	580	500	50	8	11	10	1	0	580
17:00	1	1	0	0	0	0	0	2	10	1	0	0	0	0	0	11	17:00	148	15	0	1	4	0	0	168	154	17	1	2	0	0	0	174
17:15	1	0	0	0	0	0	0	1	8	0	0	0	0	0	0	8	17:15	134	8	4	0	1	0	0	147	125	11	0	1	1	0	0	138
17:30	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	33	17:30	136	19	1	2	2	0	0	160	160	17	0	0	4	0	0	181
17:45	1	0	0	0	0	0	0	1	25	0	0	0	0	0	0	25	17:45	156	14	2	0	1	0	0	173	132	7	0	2	1	1	0	143
Hour	3	1	0	0	0	0	0	4	76	1	0	0	0	0	0	77	Hour	574	56	7	3	8	0	0	648	571	52	1	5	6	1	0	636
18:00	2	0	0	0	0	0	0	2	18	0	0	0	0	0	0	18	18:00	135	7	0	0	5	2	0	149	125	10	1	0	3	1	1	141
18:15	1	0	0	0	0	0	0	1	10	1	0	0	0	0	0	11	18:15	132	9	0	0	4	0	1	146	141	8	2	1	1	1	0	154
18:30	1	0	0	0	0	0	0	1	8	1	0	0	0	0	0	9	18:30	120	7	1	0	3	0	0	131	103	10	2	0	1	0	0	116
18:45	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	2	18:45	149	14	0	0	2	0	0	165	95	12	0	0	3	0	0	110
Hour	4	0	0	0	0	0	0	4	38	2	0	0	0	0	0	40	Hour	536	37	1	0	14	2	1	591	464	40	5	1	8	2	1	521
Total	271	12	1	1	1	0	0	286	264	14	1	1	1	0	0	281	Total	4691	534	124	138	118	8	6	5619	4980	569	120	150	136	11	5	5971

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	To Arm C - Drogheda Retail Park							Veh. Total	From Arm C - Drogheda Retail Park							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	16	1	1	0	0	0	0	18	7	0	2	1	0	0	0	10
07:15	15	1	0	0	0	0	0	16	6	1	0	0	1	0	0	8
07:30	8	2	0	0	0	0	0	10	5	3	0	0	0	0	0	8
07:45	19	8	0	1	0	0	0	28	7	0	0	0	0	0	0	7
Hour	58	12	1	1	0	0	0	72	25	4	2	1	1	0	0	33
08:00	34	7	3	0	0	0	0	44	15	2	1	0	0	0	0	18
08:15	52	2	0	2	1	0	0	57	12	4	0	1	1	0	0	18
08:30	55	8	3	1	0	1	0	68	23	3	0	0	1	0	0	27
08:45	62	6	1	1	0	0	0	70	28	5	2	0	0	0	0	35
Hour	203	23	7	4	1	1	0	239	78	14	3	1	2	0	0	98
09:00	97	13	2	2	0	0	0	114	22	8	4	0	0	0	0	34
09:15	70	10	0	2	0	0	0	82	41	3	0	0	0	0	0	44
09:30	52	4	0	0	2	0	0	58	37	4	1	1	0	0	0	43
09:45	67	3	2	1	0	0	0	73	51	4	3	0	0	0	0	58
Hour	286	30	4	5	2	0	0	327	151	19	8	1	0	0	0	179
10:00	58	5	3	2	0	0	0	68	47	7	1	1	0	1	0	57
10:15	73	3	1	2	0	0	0	79	42	7	2	0	1	0	0	52
10:30	64	5	0	1	1	1	0	72	51	2	2	4	0	0	0	59
10:45	91	5	1	3	0	0	0	100	63	1	2	3	0	0	0	69
Hour	286	18	5	8	1	1	0	319	203	17	7	8	1	1	0	237
11:00	90	4	3	3	0	0	0	100	61	2	0	2	0	0	0	65
11:15	91	5	0	1	2	0	0	99	67	5	0	1	1	0	0	74
11:30	109	10	3	1	0	1	0	124	58	5	2	0	0	0	0	65
11:45	78	7	3	3	0	0	0	91	77	5	2	2	0	1	0	87
Hour	368	26	9	8	2	1	0	414	263	17	4	5	1	1	0	291
12:00	103	4	1	1	1	0	0	110	67	9	2	3	1	0	0	82
12:15	94	2	0	0	1	1	1	99	86	3	2	3	0	1	0	95
12:30	89	3	4	0	0	0	0	96	80	0	1	1	0	0	0	82
12:45	100	7	2	0	0	0	0	109	99	5	2	2	1	1	1	111
Hour	386	16	7	1	2	1	1	414	332	17	7	9	2	2	1	370
13:00	101	8	2	1	0	0	0	112	91	7	2	0	0	0	0	100
13:15	104	9	3	2	1	0	0	119	90	7	1	1	0	0	0	99
13:30	87	3	2	0	0	1	0	93	86	7	3	0	0	0	0	96
13:45	95	9	0	1	1	0	0	106	84	4	3	0	0	1	0	92
Hour	387	29	7	4	2	1	0	430	351	25	9	1	0	1	0	387
14:00	101	3	0	0	0	0	0	104	81	8	0	1	0	0	0	90
14:15	70	8	1	1	0	1	0	81	64	6	1	0	0	0	0	71
14:30	76	9	0	1	1	0	0	87	92	6	0	0	0	0	0	98
14:45	94	6	1	1	0	0	0	102	59	12	1	1	0	0	0	73
Hour	341	26	2	3	1	1	0	374	296	32	2	2	0	0	0	332
15:00	93	12	1	1	1	0	0	108	87	7	0	1	0	0	0	95
15:15	90	6	0	0	0	0	0	96	75	11	0	0	0	0	0	86
15:30	86	7	0	0	2	0	1	96	89	5	0	2	0	0	0	96
15:45	74	10	1	1	0	0	0	86	81	9	0	0	0	0	0	90
Hour	343	35	2	2	3	0	1	386	332	32	0	3	0	0	0	367
16:00	85	3	0	0	0	0	0	88	67	6	2	1	2	1	0	79
16:15	83	9	2	0	0	0	0	94	74	12	1	1	0	0	0	88
16:30	77	8	1	0	1	0	0	87	99	10	1	0	0	0	0	110
16:45	83	5	0	1	0	0	0	89	92	10	2	2	0	0	0	106
Hour	328	25	3	1	1	0	0	358	332	38	6	4	2	1	0	383
17:00	94	11	1	0	0	0	0	106	117	12	1	0	0	0	0	130
17:15	72	8	0	0	0	0	0	80	101	5	0	0	0	0	0	106
17:30	101	10	0	0	2	0	0	113	89	9	0	0	0	0	0	98
17:45	71	5	1	0	0	0	0	77	90	5	2	1	1	0	0	99
Hour	338	34	2	0	2	0	0	376	397	31	3	1	1	0	0	433
18:00	61	2	0	0	0	1	1	65	99	5	0	0	0	0	0	104
18:15	76	3	0	0	1	1	0	81	69	5	1	0	0	0	1	76
18:30	64	5	1	0	0	0	0	70	68	1	0	0	0	0	0	69
18:45	54	7	1	0	0	0	0	62	86	10	1	0	0	0	0	97
Hour	255	17	2	0	1	2	1	278	322	21	2	0	0	0	1	346
Total	3579	291	51	37	18	8	3	3987	3082	267	53	36	10	6	2	3456

10569 / Drogheda Retail Park
October 2019
Junction Turning Count

Site No. 3
Location Access Road / Donore Road(E) / Drogheda Retail Park / Donore Road(W)
Date Thursday 17 October 2019

Time	To Arm D - Donore Road(W)							Veh. Total	From Arm D - Donore Road(W)							Veh. Total
	CAR	LGV	OGV1	OGV2	PSV	M/C	P/C		CAR	LGV	OGV1	OGV2	PSV	M/C	P/C	
07:00	61	7	2	2	7	1	0	80	43	0	0	3	2	0	0	48
07:15	54	9	3	4	5	0	1	76	44	4	4	1	1	0	0	54
07:30	79	22	4	6	7	0	0	118	49	6	3	1	5	0	1	65
07:45	74	18	2	4	2	0	0	100	71	12	2	4	3	0	1	93
Hour	268	56	11	16	21	1	1	374	207	22	9	9	11	0	2	260
08:00	58	13	5	5	5	0	0	86	80	14	4	5	2	0	0	105
08:15	52	10	1	5	6	0	0	74	114	9	2	3	1	0	0	129
08:30	62	4	1	2	3	0	0	72	138	15	3	5	2	1	0	164
08:45	65	14	3	2	1	1	0	86	176	17	9	7	6	0	0	215
Hour	237	41	10	14	15	1	0	318	508	55	18	20	11	1	0	613
09:00	50	12	6	4	3	0	0	75	144	15	5	5	5	0	1	175
09:15	62	15	7	5	3	0	0	92	106	14	2	4	2	0	0	128
09:30	54	8	6	6	2	0	0	76	77	8	2	1	2	0	0	90
09:45	45	6	3	2	3	0	0	59	74	14	5	4	1	0	0	98
Hour	211	41	22	17	11	0	0	302	401	51	14	14	10	0	1	491
10:00	58	11	3	3	0	0	0	75	73	7	5	6	1	0	0	92
10:15	68	12	7	1	1	0	0	89	64	7	2	6	4	0	0	83
10:30	60	4	6	7	5	0	0	82	76	5	4	3	0	0	0	88
10:45	75	9	1	5	2	0	0	92	67	10	1	8	2	0	0	88
Hour	261	36	17	16	8	0	0	338	280	29	12	23	7	0	0	351
11:00	70	10	0	7	2	0	0	89	55	10	4	7	3	0	0	79
11:15	69	7	1	5	2	0	0	84	77	10	3	6	4	0	0	100
11:30	58	7	5	8	2	0	0	80	77	8	4	5	0	0	0	94
11:45	69	8	7	7	1	1	0	93	55	13	4	6	3	0	1	82
Hour	266	32	13	27	7	1	0	346	264	41	15	24	10	0	1	355
12:00	80	13	3	6	1	0	0	103	62	9	2	6	2	0	0	81
12:15	99	9	3	6	0	1	0	118	62	11	9	6	1	0	0	89
12:30	81	5	6	7	4	1	0	104	81	8	8	7	1	0	0	105
12:45	81	14	4	5	3	0	0	107	68	10	3	3	1	0	0	85
Hour	341	41	16	24	8	2	0	432	273	38	22	22	5	0	0	360
13:00	86	18	5	2	3	0	1	115	66	8	4	1	4	0	0	83
13:15	70	8	0	6	1	0	0	85	79	10	1	4	1	0	0	95
13:30	82	10	6	2	1	0	0	101	65	6	3	2	1	0	0	77
13:45	76	6	3	5	3	0	0	93	84	11	3	5	1	0	0	104
Hour	314	42	14	15	8	0	1	394	294	35	11	12	7	0	0	359
14:00	64	13	2	3	5	0	0	87	85	17	2	2	4	0	0	110
14:15	47	12	3	3	3	0	0	68	70	11	2	6	1	1	0	91
14:30	82	13	1	2	1	0	0	99	59	12	0	3	0	0	0	74
14:45	66	14	4	6	5	0	0	95	82	13	4	3	1	0	0	103
Hour	259	52	10	14	14	0	0	349	296	53	8	14	6	1	0	378
15:00	69	14	1	2	2	0	0	88	100	13	3	5	3	0	0	124
15:15	87	8	0	6	2	0	0	103	84	9	2	4	4	1	0	104
15:30	83	11	0	4	2	0	0	100	89	15	1	3	6	0	0	114
15:45	88	13	1	3	4	0	0	109	90	13	1	6	4	1	0	115
Hour	327	46	2	15	10	0	0	400	363	50	7	18	17	2	0	457
16:00	96	10	2	3	5	1	0	117	96	13	2	3	3	0	0	117
16:15	101	10	3	5	1	0	0	120	96	16	5	1	2	0	0	120
16:30	120	14	1	3	4	1	0	143	100	15	4	3	4	0	0	126
16:45	111	24	5	4	1	0	0	145	107	16	0	3	0	1	0	127
Hour	428	58	11	15	11	2	0	525	399	60	11	10	9	1	0	490
17:00	156	20	2	2	0	0	0	180	118	17	1	1	4	0	0	141
17:15	143	11	0	1	1	0	0	156	116	11	4	0	1	0	0	132
17:30	166	15	0	0	2	0	0	183	121	18	1	2	2	0	0	144
17:45	132	8	1	3	2	1	0	147	113	15	2	0	1	0	0	131
Hour	597	54	3	6	5	1	0	666	468	61	8	3	8	0	0	548
18:00	136	14	1	0	3	0	0	154	92	8	0	0	5	2	0	107
18:15	114	13	3	1	0	0	0	131	103	11	0	0	4	0	0	118
18:30	91	8	2	0	1	0	0	102	97	8	2	0	3	0	0	110
18:45	89	16	1	0	3	0	0	109	109	15	1	0	2	0	0	127
Hour	430	51	7	1	7	0	0	496	401	42	3	0	14	2	0	462
Total	3939	550	136	180	125	8	2	4940	4154	537	138	169	115	7	4	5124

14.0 MATERIAL ASSETS

14.1 INTRODUCTION

This chapter evaluates the impacts, if any, which the Proposed Development may have on Material Assets as defined in Directive 2014/52/EU, the EPA Draft EIA Report Guidelines 2017 and EPA Draft Advice Notes for EIS 2015.

14.2 METHODOLOGY

In 2011 EIA Directive (2011/92/EU) material assets included architectural and archaeological heritage. In accordance with the 2014 EIA Directive, those heritage aspects are dealt with as components of cultural heritage (which are addressed in Chapter 12 Archaeological, Architectural and Cultural Heritage of this EIA Report).

The EPA Draft EIA Report Guidelines 2017 state that material assets are now taken to mean built services and infrastructure, roads and traffic and waste management. The EPA Draft Advice Notes for EIS 2015 also give the following examples of material assets; assimilative capacity of air, ownership and access and tourism.

In this EIA Report, the impacts on some of the material assets described above have been considered in the following chapters of this EIA Report as follows:

- Chapter 5 Population and Human Health;
- Chapter 9 Air Quality & Climate;
- Chapter 13 Traffic & Transportation; and
- Chapter 15 Waste Management.

The European Commission Guidance on the preparation of the Environmental Impact Assessment Report has been considered in the preparation of the EIA report refers to a number of examples of material assets including buildings, other structures, mineral resources and water resources. The Proposed Development will not impact on any other structures or buildings. The impacts on mineral resources and water resources have been considered in the following chapters of this EIA Report as follows:

- Chapter 6 Land, Soils, Geology & Hydrogeology; and
- Chapter 7 Hydrology.

This chapter assesses ownership and access, built services and infrastructure, which have not already been addressed elsewhere in this EIA Report. Section 14.3 addresses ownership and access. The subsequent sections address built services and infrastructure. The potential impacts on built services and infrastructure, if any, are assessed in terms of the following:

- Power and Electrical Supply;
- Telecommunications;
- Surface water infrastructure;
- Foul drainage infrastructure; and
- Water supply.

Assessment of impact on utilities has been undertaken by confirmation of supply with the various utility suppliers including Eirgrid, ESB Networks and Irish Water (IW). Mitigation measures are proposed where required.

14.3 OWNERSHIP AND ACCESS

The EPA Draft Advice Notes 2015 refer to the need to consider the ownership and accessibility of the site. This section addresses ownership and accessibility of the site for the Proposed Development.

The site of the Proposed Development as described in Chapter 2 Description of the Proposed Development is owned by the IDA Ireland (IDA) and CAP Developments LLC Letters of consent are included with the planning application.

The main site access is along the eastern boundary of the site. It forms a T-junction with the IDA Business and Technology Park access road, at a point approximately 260 metres north of Donore Road. The IDA Business and Technology Park access road, in turn, connects to Donore Road at its roundabout junction with Donore Road and the Drogheda Retail Park access road. A maximum speed limit of 20km/hour will be in place on the access road. A pair of access gates will be manned and maintained by security personnel at this entrance 24/7. (The access gates have been designed to act as a truck lock as and when required). The site will be fully secured with a 3m high security fence, CCTV and surveillance systems.

Construction traffic will enter and exit the site via the construction site access, which forms a roundabout junction with the IDA Business and Technology Park access road, at a point approximately 100 metres north of Donore Road. Once construction of the Proposed Development is complete, this additional entrance will be for emergency access and for occasional HGV deliveries to the site.

14.4 RECEIVING ENVIRONMENT

The proposed drainage infrastructure has been described in Chapter 2 (Description of the Proposed Development) and Chapter 7 (Hydrology). Detailed water supply and drainage design information is provided in the *Engineering Services Report – Drainage and Water Services* prepared by CSEA, which accompanies the planning application.

The associated built services and infrastructure in the vicinity of the site are summarised in the following sections.

14.4.1 Power and Electrical Supply

An existing 110kV overhead power line crosses the Proposed Development site in the northwest corner. This supply will be connected though drop down connection masts and underground transmission lines to the proposed 110 kV substation.

14.4.2 Telecommunications

A fibre optic cable distribution network is in place in the IDA Business and Technology Park. The requirement for telecoms is minor for this Proposed Development and there is sufficient capacity in the network already being installed for the Permitted Development.

14.4.3 Surface Water Infrastructure

There is an existing surface water sewer within the IDA Business and Technology Park which is discharged to the public sewer at the north-eastern corner of the Park via a 750mm diameter concrete pipeline. The surface water drainage design of the Permitted Development (MCC ref: LB/191735) includes for attenuation to greenfield

run-off rates for the Proposed Development. The Proposed Development will have no additional impact on off site surface water infrastructure or potential for off site flooding. This is further discussed in section 7.5.2.

14.4.4 Foul Drainage Infrastructure

Foul sewage (peak and avg flow) will discharge to the Permitted Development campus infrastructure. Which discharges to an existing IDA foul sewer to the east of the data storage campus site via a 225 mm Ø connection. The Irish Water approval connection (CDS2000232101), Appendix 14.1) includes the discharge flow calculated from the substation development. The allowance is based on a single toilet and tea -station.

The demand from the Proposed Development on wastewater infrastructure will not affect the ability of any existing or future developments in the area to access wastewater discharge.

14.4.5 Water Supply

Irish Water and has provided a connection offer for the Permitted Development. It is proposed to install an 80mm connection from the external watermain in the south east corner of the Permitted Development site. This main will also feed the Proposed Development which was accounted for as part of the overall Permitted Development campus water demand calculations. Irish Water have confirmed connection to its water network ((CDS2000232101), Appendix 14.1). The allowance for the Proposed Development is minimal and is based on a single toilet and tea -station.

The demand from the Proposed Development on water supply will not affect the ability of any existing or future developments in the area to access water through this water supply.

14.5 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

14.5.1 Construction Phase

Power and Electrical Supply
During construction, contractors will require power for heating and lighting of the site and their onsite construction compound. The power requirements will be relatively minor. It is proposed that a temporary power supply be established for the construction phase.

Surface Water and Foul Drainage Infrastructure and Water Supply
Welfare facilities (canteens, toilets etc.) will be required for the construction staff. A temporary connection to the mains water supply will be established for the construction phase. The water demand during the short term construction phase will not be significant enough to affect existing pressures. A temporary connection to the foul water drainage network for the IDA Business and Technology Park will also be required. The foul water drainage network has sufficient available capacity for the wastewater discharges from the welfare facilities for the short term construction phase. Approval for temporary connections to the water supply and foul water drainage network will be sought from IW by the contactor.

14.5.2 Operational Phase

Power and Electrical Supply
The Proposed Development will supply the permanent power supply to the adjacent data centre development. The Proposed Development includes a 49kVA house supply which will supply the GIS substation.

Surface Water Infrastructure
The drainage design for the Permitted Development included the Proposed Development. Rainwater runoff from building roofs, yards and the proposed road network will be collected in newly constructed storm water drainage channels, which will include a network of sustainable urban drainage system (SuDS) swales and french drains, and be diverted to the surface water attenuation storage (designed as part of the Permitted Development). The attenuation storage provided will comprise a detention basin (with a capacity of c. 7,549m^3).

The drainage design for the Permitted Development includes a Class 1 bypass interceptor upgradient of the detention basin to ensure the quality of surface water discharge is controlled prior to attenuation and discharge offsite. In addition, a hydrodynamic solid separator is provided within the drainage network to screen rubbish, debris and sediment from the surface water runoff before it enters the attenuation basin. A shut off valve is included in the design to ensure that site discharges can be shut off in the event of a fire or other form of significant surface water contamination event.

The attenuated storm water will be discharged to the existing IDA stormwater system via storm water rising main at a controlled rate of 39.07 l/s, which is the equivalent greenfield runoff rate as set out in the *Engineering Services Report – Water and Drainage Services*, prepared by Clifton Scannell Emerson Associates (CSEA)) for the Permitted Development.

Further detail on the storm water drainage system and the basis of its design is provided in the *Engineering Services Report – Water and Drainage Services*, prepared by CSEA, included with the planning documentation. Surface water discharges are also described in this EIA report in Chapter 7 Hydrology of this EIA Report.

Foul Drainage Infrastructure
Domestic effluent arising the Proposed Development will discharge to the foul drainage network designed for the Permitted Development. This will be collected in newly constructed foul drainage network within the datacentre site and discharged to the MCC network (225mmø pipe) within the IDA Business and Technology Park. The wastewater discharged from the site will ultimately discharge to the Drogheda Wastewater Treatment Plant (WWTP).

The project engineers, CSEA, have calculated that the daily wastewater discharge for the Proposed Development and Permitted Development once operational will be 0.03 litres per second (l/s).

Further detail in relation to waste water emissions is presented in the CSEA *Engineering Services Report- Drainage and Water Services.*

Water Supply
Water is required for general potable supply for drinking and sanitary facilities. This will be sourced from the Permitted Development and ultimately the mains water supply via a connection to the existing 300mmø watermain that serves the IDA Business and Technology Park.

Cold water storage tanks will be provided as part of the Permitted Development; pumps will supply water to the Proposed Development from the storage tanks. The storage tanks will act as break tanks and buffer demand on the public watermain infrastructure.

The design (Proposed Development and Permitted Development requires a peak water demand of up to 2 l/s.

Further detail in relation to water supply is presented in the CSEA *Engineering Services Report – Drainage and Water* Services included with the planning documentation.

14.6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

14.6.1 Construction Phase

Power and Electrical Supply
During construction, contractors will require power for heating and lighting of the site and their onsite accommodation. In addition, some on site equipment/plant will require power. A construction compound and temporary power supply will be installed for the construction the Proposed Development. The power requirements for the construction phase will be relatively minor and therefore the power demand for the construction phase will have a potential short term imperceptible impact.

Excavations within the vicinity of existing electrical services will be carried out in consultation with EBS Networks to ensure there is no impact on existing users.

The potential impact associated with power and electrical supply for the construction phase will be a ***short-term, neutral imperceptible***.

Surface Water Infrastructure
Run-off water containing silt will be contained on site and treated (using a siltbuster or temporary on-site settlement ponds/tanks) to ensure adequate silt removal.

As the surface water connection works are entirely within red line boundary, these works would have any potential offsite impact.

As detailed in Chapter 7, there are no likely perceptible impacts associated with surface water management for the Proposed Development for the construction phase as there is no direct pathway to surface water.

The potential impact associated with surface water for the construction phase is ***short-term, neutral*** and ***imperceptible***.

Foul Drainage Infrastructure
Welfare facilities (canteens, toilets etc.) will be required for the construction crew. A temporary connection to the foul water drainage network for the IDA Business and Technology Park will also be required. The foul water drainage network has sufficient available capacity for the wastewater discharges from the welfare facilities for the short term construction phase.

The connection to the existing foul drainage network is entirely within the red line boundary of the site. It not anticipated that the connection to this sewer would have any offsite impact.

The potential impact associated with foul drainage for the construction phase is ***short-term, neutral*** and ***imperceptible***.

Water Supply
Welfare facilities (canteens, toilets etc.) will be required for the construction staff. A temporary connection to the mains water supply will be established for the construction phase. The demand during the short term construction phase is not expected to be significant enough to affect existing pressures.

The Proposed Development will be connected via the Permitted Development infrastructure to an existing high pressure watermain that currently serves the existing IDA Business and Technology Park.

The potential impact associated with water supply for the construction phase is ***short-term, neutral*** and ***imperceptible***.

14.6.2 Operational Phase

Power and Electrical Supply
The Proposed Development has been designed in accordance with the requirements of ESB Networks. Eirgrid has confirmed that there is sufficient power available from the existing area network for the Proposed Development.

The Proposed Development has been designed in accordance with ESB Networks requirements. The nature of the Proposed Development ensures that rather than utilising electricity, the Proposed Development will facilitate continuity of supply of electricity to the Permitted Development .The proposed substation will only use a minimal amount of electricity provided by the 49kVa cable connection.

Surface water, foul water and water supply Infrastructure
The surface water and foul drainage and water supply requirements for the Proposed Development have already been incorporated into the design of the surface water and foul drainage and water supply infrastructure for the Permitted datacentre Development.

The proposed mains network connection will be metered, with associated hydrants and valves as per Irish Water requirements (as specified in the Irish Water document *Water Infrastructure Standard Details - Connections and Developer Services - Construction Requirements for Self-Lay Developments (Revision 03)* (Document Ref. IW-CDS-5020-01). As the connection works are entirely within the red line boundary, it not anticipated that this would have any perceptible offsite impact.

The potential impact associated with foul and surface water drainage and water supply for the operational phase is ***long-term, neutral*** and ***imperceptible***.

14.7 REMEDIAL AND MITIGATION MEASURES

14.7.1 Construction Phase

Construction of the Proposed Development will require power, drainage infrastructure and water supply connections but will not require any connections outside the red line boundary of the Proposed Development site.

Ongoing consultation with Eirgrid, ESB Networks and IW and other relevant service providers within the locality and compliance with any requirements or guidelines they may have will ensure a smooth construction schedule without disruption to local and business community.

Power and Electricity Supply
The power demand for the construction phase will be relatively minor and the temporary connection works are entirely within the red line boundary, and will not have any potential offsite impact.

The excavation of trenches within the vicinity of existing electrical services will be carried out in consultation with ESB Networks to ensure there is no impact on existing users.

There is no requirement for bulk chemical storage.

Surface Water Infrastructure
Run-off water containing silt will be contained on site and treated (using a siltbuster or temporary on-site settlement ponds/tanks) to ensure adequate silt removal.

The construction works will not require any interruptions to service in existing surface water sewers.

Foul Drainage Infrastructure
A temporary connection to the foul water drainage network for the Permitted Development/ IDA Business and Technology Park will be required for the welfare facilities for the construction staff. The foul water drainage network has sufficient available capacity for the wastewater discharges from the welfare facilities for the short term construction phase.

As the construction works for the new foul drainage network are entirely within the red line boundary, there is no potential for offsite impact.

Foul drainage for the Proposed Development will be in accordance with the relevant standards for design and construction, including the Irish Water Code of Practice for Wastewater Infrastructure, The Building Regulations Technical Guidance Document (TGD) 'Part H' & the Regional Code of Practice for Drainage Works.

Water Supply
Welfare facilities (canteens, toilets etc.) will be required for the construction staff. A temporary connection will be put in place for the construction phase. As the connection works are entirely within the red line boundary and temporary, this would not have any potential offsite impact. The works contractor will be obliged to manage works to ensure that there will not be any interruptions to service from the existing water main, but should interruptions be anticipated, they will be agreed in advance.

14.7.2 Operational Phase

Power , Electricity Supply
The Proposed Development has been designed in accordance with ESB Networks requirements. Eirgrid's All-Island Generation Capacity Statement 2020-2029 sets out that Eirgrid has the capacity to provide for such developments.

The nature of the Proposed Development ensures that it will facilitate continuity of supply of electricity to the Permitted Development. The proposed substation will only use a minimal amount of electricity provided by the 40kVa Connection.

No remedial or mitigation measures are required in relation to power and electricity supply.

Telecommunications
There is sufficient capacity available in the area network for the Proposed Development. Therefore, no remedial or mitigation measures are required in relation to telecommunications.

Surface Water Infrastructure
The surface water drainage system for the Proposed Development incorporates runoff control in the form of attenuation, which will restrict discharge from the Proposed Development and the Permitted Development to the allowable greenfield runoff rate of 39.07 l/s, which is the equivalent greenfield runoff rate for the area of the Permitted Development site catchment area. The attenuation storage is provided via an open pond/detention basin (c. 7,549 m^3 capacity). In addition, SuDS measures will control surface water runoff offsite. The allowable greenfield runoff rate has been established by the project engineers, CSEA, using the methodology set out in the *Engineering Services Report* which is included with the Proposed Development planning submission.

The drainage design for the Permitted Development includes a Class 1 full retention separators upgradient of the detention basin to ensure the quality of surface water discharge is controlled prior to attenuation and discharge offsite. In addition, a hydrodynamic solid separator is provided within the drainage network to screen rubbish, debris and sediment from the surface water runoff before it enters the attenuation basin. A shut off valve is included in the design to ensure that site discharges can be shut off in the event of a fire or other form of significant surface water contamination event.

In addition, discharge from the transformer will be to a Class 2 petrol interceptor before connecting to the foul drainage network for the Proposed Development.

Foul Drainage Infrastructure
IW have provided confirmation for the wastewater requirements for the Proposed Development (which are detailed in the *Engineering Services Report – Drainage and Water Services* prepared by CSEA, which accompanies the planning application). No remedial or mitigation measures are required in relation to foul drainage infrastructure.

Water Supply
Water supply will be provided through cold water storage tanks which are to be provided as part of the Permitted Development; pumps will supply water to the Proposed Development from the storage tanks. The storage tanks will act as break tanks and buffer demand on the public watermain infrastructure.

IW have provided confirmation for the wastewater requirements for the Proposed Development (which are detailed in the *Engineering Services Report – Drainage and Water Services* prepared by CSEA, which accompanies the planning application). No remedial or mitigation measures are required in relation to foul drainage infrastructure.

14.8 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

14.8.1 Construction Phase

The implementation of mitigation measures detailed above will ensure that the predicted impacts on the material assets assessed in this chapter will be ***short term, neutral*** and ***imperceptible*** for the construction phase.

14.8.2 Operational Phase

Power, Electrical Supply and Telecommunications
The Proposed Development has been designed in accordance with the requirements of ESB Networks. Eirgrid has confirmed that there is sufficient power available from the existing area network for the Proposed Development.

There are no predicted impacts associated with power and electrical supply, and telecommunications for the Proposed Development for the operational phase.

Surface Water and Foul Drainage Infrastructure and Water Supply
The surface water and foul drainage and water supply requirements for the Proposed Development have already been incorporated into the design of the Permitted Development. There are no predicted impacts on water supply, surface water infrastructure and foul drainage infrastructure post construction.

Predicted Impact – Operational Phase
The predicted impacts on power and electrical supply, telecommunications, surface water infrastructure, foul drainage infrastructure and water supply will be ***long-term, neutral*** and ***imperceptible.***

14.9 RESIDUAL IMPACTS

The Proposed Development entails minimal use of material assets examined in this chapter (i.e. power and electrical supply, telecommunications, surface water infrastructure, foul drainage infrastructure and water supply) during construction. Once operation, the Proposed Development entails moderate power usage however Eirgrid have confirmed the availability of supply and there will therefore be no significant impact on material assets to the wider economy. The overall predicted residual impact of the Proposed Development can be classed as ***long-term*** and ***not significant*** with respect to material assets.

14.10 CUMULATIVE IMPACTS

The Proposed Development entails minimal use of material assets during construction. Once operational, the Proposed Development will result in minimal impact on surface water, foul drainage and water infrastructure. The Proposed Development will connect to the surface water, foul drainage and water supply infrastructure for the Permitted Development and the requirements for the Proposed Development has already been considered in terms of the design of the infrastructure for the Permitted Development.

The Applicant has previously engaged with IW to ensure that there is sufficient capacity to cater for the water supply and wastewater for the Proposed Development, the Permitted Development and future indicative Masterplan Development. As noted in this chapter and the *Engineering Planning Report – Drainage and Water Services* prepared by CSEA, a PCE form was submitted to IW which addressed water and wastewater demand for these developments. IW provided a CoF for the development on 5th November 2019 (IW Reference Number: CDS19007702) which confirms that a foul water and water supply connection to IW is feasible.

The Proposed Development will have a negligible demand on power and the Permitted Development will have a maximum operational electrical demand of 58.2MW, with an overall maximum operational demand for the Masterplan of c. 174.6MW (based on 58.2MW per building). As stated in, Eirgrid's All-Island Generation Capacity Statement 2020-2029 sets out that Eirgrid has the capacity to provide for such developments.

Based on this, it is predicted that the cumulative impact of the Proposed Development with other permitted and planned developments is considered to be ***imperceptible*** during the construction and operational phases.

Interactions are addressed in Chapter 17 of this EIA Report.

APPENDIX 14.1

IRISH WATER CONNECTION APPLICATION

Application form
Business water and/or wastewater connection

This form should be completed by a person or organisation who wishes to apply to Irish Water for a water and/or wastewater connection to be used for agriculture, horticulture, any trade, industry or business, or any purpose other than domestic.

This form is only to be used for a **single business premise/connection**. If the application is for more than one unit please complete the Multi/Mixed Use Development Application form. If completing this form by hand, please use BLOCK CAPITALS and black ink.

For **agricultural water connections**, please complete the following fields: Section A, Section D (questions 15-17) and Section E (questions 25-27).

Please refer to the **Guide to completing the application form** on page 14 of this document when completing the form.

*** Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

Section A | Applicant details

1 PCE Reference Number (if applicable): CDS1900770 2

2 *Applicant details:

Registered company name (if applicable): AMAZON DATA SERVICES LTD (ADSIL)

Trading name (if applicable):

Company registration number (if applicable): 390566

If you are not a registered company/business, please provide the applicant's name:

*Contact name: [redacted]

*Postal address: [redacted]

BURLINGTON ROAD

DUBLIN 4

*Eircode: D04HH21

*Telephone: [redacted]

Mobile:

Email: [redacted]

3 Agent details (if applicable):

Contact name: Pauraic Matthews

Company name (if applicable): CSEA

Postal address: Seafort Lodge

Castledawson Ave.

Blackrock Co. Dublin

Eircode: A94P768

Telephone: 0128850 06

Email: pauraic.matthews@csea.ie

4 *Please indicate whether it is the applicant or the agent who should be contacted relation to the enquiry:

Applicant [X] Agent [X]

Section B | Site details

5 *Site address: Drogheda IDA Bus. Park.

Donore Rd, Drogheda, Co. Louth

6 *Irish Grid co-ordinates of site: Eastings (X) 306750 Northings (Y) 274000

Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

7 *Local Authority:

Local Authority that granted planning permission (if applicable):

Meath County Council

8 *Planning reference (current reference and any previous planning reference that may be applicable):

LB191735

Note: The development must have full planning permission before this form is submitted, or enter "EXEMPT" for exempted developments.

9 *Has full planning permission been granted? Yes [X] No [ ]

If 'Yes', please provide the date it was granted 20/03/2020

10 ***Type of premises:** New [X] Existing [ ]

If 'Existing', please specify existing use of premises: [ ]

10.1 Date that previous development was last occupied (if applicable): [ ][ ] / [ ][ ] / [ ][ ][ ][ ]

10.2 If 'Existing', please provide the WPRN number if known. [ ][ ][ ][ ][ ][ ][ ]

11 **Are there potential contaminated land issues?** Yes [ ] No [X]

If 'Yes', please include a detailed site-specific report on the approach being taken to deal with contaminated land and the measures being taken to mitigate the impact on infrastructure.

Section C | Development details

12 **Please outline the industry/business use proposed:**

Property type	Select	Property type	Select	Property type	Select
Office	1	School	-	Retail unit	-
Residential care home	-	Institution	-	Industrial unit	1
Hotel	-	Factory	-	Other	-
Other (please specify type)					

13 ***Approximate start date of proposed development:** 0 1 / 0 6 / 2 0 2 0

14 ***Please indicate the type of connection required by ticking the appropriate box below:**

Water [ ] Please go to Section D

Wastewater [ ] Please go to Section E

Both [X] Please complete both Sections D and E

Section D | Water connection and demand details

15 ***Is there an existing connection to public water mains at the site?** Yes [ ] No [X]

15.1 If yes, is this application for an additional connection to one already installed? Yes [ ] No [X]

15.2 If yes, is this application to increase the size of an existing water connection? Yes [ ] No [X]

15.3 Please indicate pre-development water demand (if applicable):

Pre-development peak hour water demand	N/A	**l/s**
Pre-development average hour water demand	N/A	**l/s**

Pre-development refers to brownfield sites only. Please include calculations on the attached sheet provided.

16 ***Approximate date water connection is required:** 0 1 / 0 1 / 2 0 2 1

17 ***What diameter of water connection is required to service this development?** 1 5 0 mm

Please note that the connection size provided may be used to determine the connection charge.

18 ***Please indicate business water demand (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak hour water demand	0.5	**l/s**
Post-development average hour water demand	0.08	**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 ***Please indicate the industrial water demand (industry-specific water requirements):**

Post-development peak hour water demand	6.0	**l/s**
Post-development average hour water demand	1.0	**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

20 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**

4 8 . 5 0 m

21 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?**

5 1 . 7 5 m

22 ***Is on-site water storage being provided?** Yes [x] No [ ]

Please include calculations on the attached sheet provided.

23 ***Are there fire flow requirements?** Yes [ ] No [x]

Additional fire flow requirements over and above those identified in Q18-19	N/A	**l/s**

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

24 ***Do you propose to supplement your potable water supply from other sources?** Yes [ ] No [X]

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 14 of this document for further details):

Section E | Wastewater connection and discharge details

25 ***Is there an existing connection to a public sewer at the site?** Yes [ ] No [X]

25.1 If yes, is this aplication for an additional connection to the one already installed? Yes [ ] No [X]

25.2 If yes, is this application to increase the size of an existing connection? Yes [ ] No [X]

25.3 Please indicate pre-development wastewater discharge (if applicable):

Pre-development peak discharge	N/A	**l/s**
Pre-development average discharge	N/A	**l/s**

Pre-development refers to brownfield sites only. Please include calculations on the attached sheet provided.

26 ***Approximate date that wastewater connection is required:** 01 / 01 / 2021

27 ***What diameter of wastewater connection is required to service the development?** 225 mm

Please note that the connection size provided may be used to determine the connection charge.

28 ***Please indicate the business wastewater hydraulic load (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak discharge	0.54	**l/s**
Post-development average discharge	0.09	**l/s**

Please include calculations on the attached sheet provided.

29 ***Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):**

Post-development peak discharge	N/A	**l/s**
Post-development average discharge	N/A	**l/s**

Please include calculations on the attached sheet provided.

30 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)	295	168	5.5
Chemical oxygen demand (COD)	699	389	9.7
Suspended solids (SS)	299	163	4.2
Total nitrogen (N)	59.6	40.6	0.9
Total phosphorus (P)	11.3	7.1	0.2
Other	0	0	0

Temperature range	10-15 degrees C
pH range	6.73-9.0

31 *Is a Trade Effluent Discharge to Sewer Licence required? Yes [ ] No [X]

If 'Yes', please complete the wastewater characteristic form included in this document (see Table 1 on page 13) in order to allow us to ascertain the nature of the effluent to be discharged to the Irish Water network. A Trade Effluent Discharge to Sewer Licence can be applied for at **www.water.ie/tradeeffluent**

32 *Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes [ ] No [X]

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

33 *Do you propose to pump the foul wastewater? Yes [ ] No [X]

If 'Yes', please include justification for your pumped solution with this application.

34 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?

48.50 m

35 What is the lowest finished floor level on site above Malin Head Ordnance Datum? 50.75 m

36 What is the proposed invert level of the pipe exiting the property to the public road?

43.75 m

Section F | Supporting documentation

Please provide clear and legible versions of the following mandatory documents (all mandatory):

> Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the application relates. The map shall include the following details: [X]

a) The scale shall be clearly indicated on the map.

b) The boundaries shall be delineated in red.

c) The site co-ordinates shall be marked on the site location map.

> Site layout map(s) to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Irish Water infrastructure. [X]

> All design submissions as outlined in the **Irish Water Codes of Practice for Water Infrastructure** and the **Irish Water Codes of Practice for Wastewater Infrastructure**, including the layout of all other services to be provided within the site (for example: gas, electricity, telecommunications). [X]

> All design calculations as outlined in the Irish Water Codes of Practice for Water Infrastructure and the Irish Water Codes of Practice for Wastewater Infrastructure. [X]

> Conceptual design of the connecting asset to the proposed development to the existing Irish Water infrastructure including service conflicts, gradients, pipe sizes and invert levels. [X]

> Any other information that would help Irish Water assess this application. [X]

Section G | Declaration

I/We hereby make this application to Irish Water for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Irish Water.

The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Irish Water and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Irish Water to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Irish Water's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature: [redacted] Date: 0 1 / 0 4 / 2 0 2 0

Your full name (in BLOCK CAPITALS): [redacted]

Irish Water will carry out a formal assessment based on the information provided on this form.
Any future connection offer made by Irish Water will be based on the information that has been provided here.

Please submit the completed form to **newconnections@water.ie** or alternatively, post to:

Irish Water
PO Box 860
South City Delivery Office
Cork City

Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

Please note, if mandatory fields are not completed the application will be returned.

Irish Water is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Irish Water accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

Calculations

Water demand

INDUSTRIAL COOLING WATER:

Water demand and storage capacities were calculated based on the final build-out of the campus.

Peak Demand per building (adiabatic coolers) = 100,000 L/day
Peak Demand total (adiabatic coolers) = 320,000 L/day

Storage Replenishment Criteria = 24 hours at peak demand
Storage Replenishment Rate = 3.7 l/s

+0.2 L/S for other site uses = 3.90 l/s
+safety margin - total peak usage = 6.00 l/s

Approx. average water use is 1.0 litres / sec
Peak is only needed when temperatures are at a maximum.

STAFF ACCOMMODATION:

Number of Staff - 150 for the full campus

Daily consumption (G) = 45 littre per head per day (Irish Water Code of Practice for Water Infrastructure Doc. No. IW-CDS-5020-03 Section 3.28)

Pf Ind = 1.25*5 = 6.25 (Section 3.7.2 of IW-CDS-5020-03)

Dry Weather Flow (DWF) = 150 x 45 / (24 x 60 x 60) = 0.08 litres / sec
Design Flow = DWF x Pf Ind = 0.08 x 6.25 = 0.5 litres / sec

On site storage

First Building Storage - 100,000 liters
Total Campus Storage - 320,000 liters

Fire flow requirements

450,000 litres fire sprinkler tank on-site will be filled on building occupancy, infrequent topups thereafter

Number of Staff - 150 for full campus

Daily Comsumption (G) = 50 litre per head per day (Irish Water Code of Practice for Wastewater Infrastructure, Document No. IW-CDS-5030-03, Appendix D)

Pf Ind = 6.0 (Section 6.2.5 of IW-TEC-800-01)

Dry Weather Flow (DWF) = 150 x 50 / (24 x 60 x 60) = 0.09 litres / sec
Design Flow = DWF x Pf Ind = 0.09 x 6.0 = 0.54 litres / sec

N/A

Table 1: Wastewater characteristic form
(Only to be filled out if a Trade Effluent Discharge to Sewer Licence is required).

Wastewater characteristic:	Prior to treatment	As discharged
Temperature (oC)		
pH		
Colour (degrees Hazen)		
BOD (mg/l)		
COD (mg/l)		
Suspended solids (mg/l)		
Settleable solids (mg/l)		
Dissolved solids (mg/l)		
Ammonia (as N) (mg/l)		
Nitrates (as N) (mg/l)		
Phosphorus (as P) (mg/l)		
Sulphates (as SO4) (mg/l)		
Chlorides (as C1) (mg/l)		
Phenols (as C6H5OH) (mg/l)		
Detergents (as lauryl sulphate)		
Fats, oils and grease (mg/l)		
Metals (specify each) (mg/l)		
Organohalogen compounds (specify each)		
Organophosphorus compounds (specify each)		
Organotin compounds (specify each)		
Mineral oils or hydrocarbons of petroleum origin (mg/l)		
Other relevant characteristics		

Guide to completing the application form

This form should be completed by customers requiring a business water and/or wastewater connection to Irish Water infrastructure.

The Irish Water Codes of Practice are available at **www.water.ie** for reference.

Section A | Applicant details

Question 1: Please state the Pre-Connection Enquiry (PCE) reference number provided during the Pre-Connection Enquiry Phase if applicable.

Question 2: This question requires the applicant or company applying for a connection to identify themselves, their postal address, and to provide their contact details.

Question 3: If the applicant has employed a consulting engineer or an agent to manage the application on their behalf, the agent's address and contact details should be recorded here.

Question 4: Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

Section B | Site details

Question 5: This is the address of the site requiring the water/wastewater service connection and for which this application is being made.

Question 6: Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with the application.

Question 7: Please identify the Local Authority that is dealing with your planning application, for example Cork City Council.

Question 8: Please provide the planning reference number granting planning approval for your proposed development.

Question 9: Please indicate if full planning permission has been granted. If "yes" enter the date it was granted.

Question 10: Please indicate if there is an existing premises, and where there is, please specify the current use of the premises, for example commercial or industrial business type. If greenfield, please state 'agricultural'. This will help us to determine the current water demand and wastewater discharge.

Question 10.1: Please specify the date that the development site was last occupied. Your answer will help us to determine the previous water usage/wastewater load of the development. If the site was previously greenfield, then this question does not need to be completed.

Question 10.2: Water Point Reference Number (WPRN)' is a unique number assigned to every single water services connection in the country. The WPRN is prominently displayed on correspondence received from Irish Water, and can be found on water bills, previous connection offers, or previous enquiries in relation to the site. Existing customers and brownfield sites should have a WPRN. New customers are not required to answer this question.

Question 11: Please provide details in relation to contaminated land on your site (if any); this will determine what pipe material will be appropriate in the vicinity of the contaminated ground.

Section C | Development details

Question 12: Please tick relevant property/premises type in the table provided and if other is selected please specify property/premises type.

Question 13: Please indicate the approximate commencement date of works on the development.

Question 14: Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

Section D| Water connection and demand details

Question 15: Please indicate if a water connection already exists for this site.

Question 15.1: Please indicate if this enquiry concerns an additional connection to one already installed on the site.

Question 15.2: Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.

Question 15.3: If the site was previously in use, please provide details of the pre-development peak hour and average hour water demand.

Question 16: Please indicate the approximate date that the proposed connection to the water infrastructure will be required.

Question 17: Please indicate what diameter of water connection is required to service this development.

Question 18: If this connection application is for a business premises, please provide calculations for the water demand and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing the pipe network will be as per the specific industry's production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 19: If this connection application is for an industrial premises, please calculate the water demand and include your calculations on the attached sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 20: Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 21: Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 22: If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.

Question 23: The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.

Question 24: Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources. If supplementing public water supply with a supply from another source, please provide details as to how the Irish Water potable water supply is to be protected from cross contamination at the premises.

Section E| Wastewater connection and discharge details

Question 25: Please indicate if a wastewater connection to a public sewer already exists for this site.

Question 25.1: Please indicate if this application is for an additional wastewater connection to one already installed.

Question 25.2: Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.

Question 25.3: If the site was previously in use, please provide details of the pre-development peak and average wastewater discharge.

Question 26: Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.

Question 27: Please indicate what diameter of wastewater connection is required to service this development.

Question 28: If this connection application is for a business premises, please provide calculations for the wastewater and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing the pipe network will be as per the specific business production requirements. Please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 29: If this connection application is for an industrial premises, please calculate the wastewater and include your calculations on the attached sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing the pipe network will be as per the specific industry's production requirements. Please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 30: Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table, and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/restaurants which would require a Trade Effluent Discharge to Sewer Licence), there is no need to complete this question.

Question 31: Where a Trade Effluent Discharge to Sewer Licence is required, it will need to be applied for separately - visit **www.water.ie/tradeeffluent** Note however that a full suite of quality analysis of the proposed discharge should be provided as part of this application by filling out Table 1 above. If you do not need a Trade Effluent Discharge to Sewer Licence, please do not fill out this form.

Question 32: In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.

Question 33: If the development needs to pump its wastewater discharge to gain access to the Irish Water infrastructure, then please specify the pump flow rate, timings of discharge, and provide justification for the pumped solution.

Question 34: Please specify the ground level at the location where connection to the public sewer will be made. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 35: Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 36: Please specify the proposed invert level of the pipe exiting the property to the public road.

Section F| Supporting documentation

Please provide additional information as listed.

Section G| Declaration

Please review the declaration, sign, and return the completed application form to Irish Water by email or by post using the contact details provided in Section G.

Notes

Notes

Notes

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[redacted]
Shannon Building
Burlington Road, Dublin 4
Dublin
D04HH21

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City

www.water.ie

CONNECTION OFFER

To: [redacted]

Amazon Data Services LTD (ADSIL)

Shannon Building
Burlington Road, Dublin 4
Dublin
D04HH21

(the "**Customer**")

Connection Reference: CDS2000232101

Date: 28 May 2020

SUBJECT TO CONTRACT

Re: Providing a Water & Wastewater Service Connection between

the "**Network(s)**"

AND

Drogheda IDA Business Park
Donore Road, Drogheda

Louth

(the "**Customer's Premises**")

Dear Sir/Madam,

Following receipt of your application for a connection to the Network(s) (the "**Customer Application**"), Irish Water is pleased to offer you ("**You**" or the "**Customer**"), a connection between the Network(s) and the Customer's Premises, subject to and in accordance with the conditions set out in this Connection Offer (the "**Connection Offer**"), the General Conditions for a Water and/or Wastewater Connection (the "**General Conditions**", copy attached in Appendix 2) and any Special Conditions pertaining to this connection (the "**Special Conditions**", as may be attached in Appendix 3).

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Yvonne Harris, Brendan Murphy, Maria O'Dwyer
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1, D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363

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This Connection Offer is conditional upon payment of the Connection Charge and the return of the signed Letter of Acceptance (the form of which is included at Appendix 1 to this Connection Offer).

(Please note that capitalised terms not otherwise defined within this Connection Offer shall have the meaning given to them in the General Conditions)

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1. Connection Agreement

We enclose a Letter of Acceptance for your consideration.

We would encourage You to read the entirety of this Connection Offer and the Connection Agreement. If You are satisfied with these and wish to proceed, please:

- sign the Letter of Acceptance and return it to **Irish Water, PO Box 860, South City Delivery Office, Cork City**. Alternatively, You can send back a scanned version of the signed Letter of Acceptance to newconnections@water.ie; and

- pay the Connection Charge in accordance with section 3 below.

You and Irish Water acknowledge that there shall be no intention to create any legally binding contract between You and Irish Water unless and until You have completed the above steps.
If, in the opinion of Irish Water, You have not returned the Letter of Acceptance or paid the Connection Charge, no contract shall come into force.

Once the signed Letter of Acceptance has been returned **and** the Connection Charge has been paid, the Connection Agreement shall become legally binding on You and Irish Water and the Connection Works can be carried out. The Connection Agreement is comprised of this Connection Offer, the General Conditions and any Special Conditions. In the event of any conflict or inconsistency between these documents, they shall apply in the following order:

i. Special Conditions
ii. General Conditions
iii. Connection Offer.

Any decision by Irish Water to enter into a Connection Agreement with You is made in reliance on the information in and with Your Customer Application. If the information supplied is incorrect or incomplete, Irish Water reserves the right to apply additional Connection Charges and contract terms.

Irish Water's decision to make a Connection Offer to You is made in reliance on the information contained in and submitted with the Connection Application. If the information supplied is incorrect or found to be materially inaccurate in any way, Irish Water reserves the right to apply additional Connection Charges, to impose additional contract terms and/or take any steps in accordance with the General Conditions.

This Connection Offer is based on a high-level desk top analysis carried out by Irish Water on the feasibility of a connection for your Development. Once the Connection Offer has been accepted by You, Irish Water will begin a detailed design of the connection. If during the process of detailed design Irish Water, at its discretion, forms the opinion (acting reasonably) that either:

A. a connection to your Development is not feasible or practicable or safe to complete; or
B. a connection to your Development would involve the expenditure by Irish Water of monies in excess of that provided for by way of the Connection Charge,

then the Connection Agreement may be terminated by Irish Water in accordance with General Condition 18.

The Connection Agreement shall constitute the entire agreement between You and Irish Water.

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Any reference in this Connection Offer to an Appendix is to an appendix to this Connection Offer.

2. Validity of Connection Offer

You have 90 days from the date of this Connection Offer to accept the Connection Offer by returning the Letter of Acceptance **and** paying the Connection Charge. Thereafter, the Connection Offer shall lapse unless otherwise agreed in writing by Irish Water.

3. Connection Charge

The Connection Charge(s) shall be determined in accordance with Irish Water's Connection Charging Policy as set out in the Water Charges Plan (which can be found at www.water.ie/connections)

The Water Connection charge is €123,372.81
The Wastewater Connection charge is €23,344.00
The Total Connection Charge is €146,716.81 ("**Connection Charge**"). A breakdown of the Connection Charge is set out in Appendix 4.

Payment of the Connection Charge can be made by:
A. Cheque, made payable to "Irish Water" or
B. Money Transfer, by EFT to the following bank account:

Allied Irish Bank, 40/41 Westmoreland Street, Dublin 2, Ireland.

Account Name	BIC	IBAN
IW AR-EFT	AIBKIE2D	IE29 AIBK 9333 8464 3085 94

Please note that You must quote the Irish Water reference number specified above in any communications and when making payment (see 'Our Reference' on the first page of this letter). The Connection Charge will only be deemed paid when funds have cleared in Irish Water's bank account.

4. Connection Works

Once the Connection Offer has been validly accepted, Irish Water or its agent shall make contact with You to schedule the Connection.

5. Distribution System, Drains and Service Connection

You are responsible for providing, maintaining and renewing the Distribution System and/or Drains and Service Connection required for the provision of Water Services (see General Condition 10).

6. Cancellation by the Customer

You may cancel the proposed Connection by writing to Irish Water at the contact address set out below within fourteen (14) Business Days of returning the Letter of Acceptance:

- noting that you wish to cancel the Connection; and
- quoting the reference number set out above (see 'Our Reference' on the first page of this letter);

No charges will be incurred by You unless the Connection or part thereof has already been carried out with your agreement. If You cancel the Connection in accordance with this paragraph, Irish Water will refund any payment which You have already made for the proposed Connection, subject to any costs that may have already been incurred by Irish water in the provision of the Connection.

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7. Queries

If You have any queries in relation to the payment of the Connection Charge or otherwise, please contact Irish Water's Customer Service Department at:

Telephone:	1850 278 278 or +353 1 707 2828
Email:	newconnnections@water.ie
Web:	www.water.ie/contact-us

8. Disputes

Any dispute in respect of the terms of this Connection Offer (including in relation to the Connection Charge) may be referred to the Commission for Regulation of Utilities for determination.
Once a legally binding Connection Agreement comes into force, all disputes in relation to your agreement with Irish Water shall be resolved pursuant to General Condition 30 of the General Conditions (attached).

9. Next Steps

- **Accepting the Offer**: sign and return the Letter of Acceptance and pay the Connection Charge.
- **Customer Construction Phase**: If required, Irish Water or its agent will contact You in relation to the connection assets required to facilitate your connection to the Network(s).
- **Connection to Network(s)**: Irish Water or its agent will contact You to arrange a suitable time to complete the Connection Works.

We look forward to hearing from You.

Yours sincerely,

M Dwyer

Maria O'Dwyer,
Connections and Developer Services Manager
For and on behalf of Irish Water

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Appendix 1

Letter of Acceptance

DocuSign Envelope ID: A5578780-756E-48CF-A9D2-33576DBE4CCA

Letter of Acceptance

[to be returned to Irish Water]

Irish Water

PO Box 860

South City Delivery Office

Cork City

I/we have read, understood, accept and agree to comply in full with the terms of the Connection Offer dated 28 May 2020, the General Conditions and any Special Conditions (which together constitute the Connection Agreement).

I/we further understand and acknowledge that there shall be no intention to create any legally binding contract between me/us and Irish Water unless and until I/we have completed, signed and returned this Letter of Acceptance and paid the Connection Charge.

I/we have made payment for Connection Reference CDS2000232101 via

Electronic Funds Transfer EFT ☒

Cheque ☐

Customer address: One Burlington Plaza, Burlington Road, Dublin 4, Ireland

Customer's signature: [redacted]

For and on behalf of: Amazon Data Services Ireland Limited

Print full name of Customer in BLOCK letters: [redacted]

Date: July 31, 2020

Connection Reference: CDS2000232101

DocuSign Envelope ID: A5578780-756E-48CF-A9D2-33576DBE4CCA

Letter of Acceptance

[Customer Copy]

[to be retained by Customer]

I/we have read, understood, accept and agree to comply in full with the terms of the Connection Offer dated [___*insert date*_____], the General Conditions and any Special Conditions (which together constitute the Connection Agreement).

I/we further understand and acknowledge that there shall be no intention to create any legally binding contract between me/us and Irish Water unless and until I/we have completed, signed and returned this Letter of Acceptance and paid the Connection Charge.

I/we have made payment for Connection Reference CDS2000232101 via

Electronic Funds Transfer EFT ☐
Cheque ☐

Customer address: _____

Customer's signature: _____

For and on behalf of: _____

Print full name of Customer in BLOCK letters: _____

Date: _____

Connection Reference: CDS2000232101

APPENDIX 2

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General Conditions

DocuSign Envelope ID: A5578780-756E-48CF-A9D2-33576DBE4CCA

IRISH WATER

General Conditions for a Water and/or Wastewater Connection

(Version 0.2)

February 2019

DocuSign Envelope ID: A5578780-756E-48CF-A9D2-33576DBE4CCA

General Conditions for a Water and/or Wastewater Connection
(the "General Conditions")

1. **Definitions:** In these General Conditions the following definitions apply:

"Affiliate" of a Person means any subsidiary or holding company (within the meaning given to such expressions by the Companies Act 2014) of such Person or any subsidiary of any such holding company;

"Applicable Law" means all Acts of the Oireachtas, statutory instruments, regulations, orders and other legislative provisions which in any way relate to the Connection Agreement, including the Water Services Acts, the Building Regulations, the Construction Regulations and any code or guidance as may be issued from time to time by any Regulator or relevant industry authority. Any reference to "Applicable Law" or any enactment or statutory provision is a reference to it as it may have been, or may from time to time be amended, modified, consolidated or re- enacted;

"Building Regulations" mean the Building Control Acts 1990 to 2014 and all subordinate legislation and regulations made pursuant to the said Acts including, without limitation the Building Control Regulations 1997 to 2017 and relevant codes of practice, and any amendment, update or replacement or repeal thereof;

"Business Day" means every day other than a Saturday or Sunday or bank or public holiday in Ireland;

"**Competent Authority**" means any local or national or supra-national agency, authority, department, inspectorate, ministry, official or public or statutory Person (whether autonomous or not) or regulatory authority of Ireland or of the European Union which has jurisdiction over any of the Parties to the Connection Agreement and the subject matter of the Connection Agreement, including the Commission for Regulation of Utilities but excluding a court or tribunal of competent jurisdiction;

"Connection Charging Policy" means the Irish Water Connection Charging Policy which may be found at www.water.ie/connections;

"Connection Offer" means the conditional offer letter issued by Irish Water to the Customer relating to the connection of the Customer's Premises to the Network(s) and which forms part of the Connection Agreement;

"Connection Agreement" means the agreement between the Customer and Irish Water to facilitate the connection of the Customer's Premises to the Network(s), which shall be comprised of the Connection Offer (including the appendices thereto), the General Conditions and the Special Conditions (if any);

"Connection Charge" means the charge for connecting to the Irish Water Waterworks and/or Wastewater Works (as the case may be), as specified in the Connection Offer. The Connection Charge shall only be deemed paid when funds have cleared in Irish Water's bank account;

"**Connection Facilities**" means the facilities (including the Service Connection(s)) required

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to be constructed and/or upgraded and installed by Irish Water in order to connect the Customer's Pipe Work to the Network(s);

"Connection Point(s)" means a location or locations to be determined by Irish Water (which may be outside the boundary to the curtilage of the Customer's Premises) at which the Customer's Pipe Work is to be connected to the Waterworks (where, as specified in the Connection Offer, the Customer requires connection to the Waterworks) or the Wastewater Works (where, as specified in the Connection Offer, the Customer requires connection to the Wastewater Works) (via the Service Connection(s)). Connection Points may differ for both the Waterworks and Wastewater Works;

"Connection Works" means the permanent and temporary works and services to be performed by or on behalf of Irish Water in the acquisition, design, procurement, construction and installation of the Connection Facilities and the obtaining of permits and the tie-in and commissioning of a Connection Point(s) in accordance with the requirements of this Connection Agreement;

"**Construction Regulations**" means the Safety Health and Welfare at Work Act 2005, the Safety Health and Welfare at Work (General Application) Regulations 2007 to 2016 as amended, the Safety Health and Welfare at Work (Construction) Regulations 2013 as amended and any guidance requirements issued from time to time from the Health and Safety Authority;

"Customer" means the person or entity to whom the Connection Offer is addressed and who has entered into the Connection Agreement with Irish Water;

"Customer's Pipe Work" means the pipe, relating fittings and associated accessories to be laid by the Customer within the boundary of the Customer's Premises in accordance with Relevant Standards and Applicable Laws, , and the Distribution System (if connecting to the Waterworks) and the Drain (if connecting to the Wastewater Works), to be used to connect the Customer's Premises at a Connection Point;

"Customer's Premises" means the premises identified as such in the Connection Offer, including any part of any public or private building, vessel, vehicle, structure or land (whether or not there are structures on the land and whether or not the land is covered with water), and any plant or related accessories on or under such land, or any hereditament of tenure, together with any out-buildings and curtilage and which is:

- receiving Water Services; or

- specified in an application for Water Services completed by the Customer; or

- a premises deemed to be a premises by Irish Water; or

- such other premises as may be notified by the Customer to Irish Water and accepted in writing by Irish Water from time to time, but does not include land which is a Public Road, a road which is the subject of an order under Section 11 of the Roads Act 1993 or a road which has been taken in charge by a local

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authority pursuant to a non-statutory local authority taking in charge scheme;

"Deed(s) of Grant of Wayleaves and Easements" means the Deed(s) of Grant of Wayleaves and Easements referred to in Clause 10 hereof;

"**Dispute**" means a difference or dispute between the Parties arising out of or in connection with this Connection Agreement;

"Distribution System" means a pipe and its related fittings, that is used or to be used as the case may be to convey water into or through one or more Customer's Premises (including any related internal or external taps) excluding a Service Connection;

"Drain" means a drainage pipe, or system of such pipes and related fittings for collection of Wastewater, that is not owned by, vested in or controlled by Irish Water, and that is not a Service Connection, which is used or to be used as the case may be, to convey Wastewater from one or more Customer's Premises or to any wastewater treatment system on a Customer's Premises where the Wastewater is generated;

"**Environment**" means the environment generally, including all physical, biological and ecological aspects of the environment and:

(a) air, including that within buildings or natural or man-made structures above or below ground;

(b) water, including the open sea, coastal or inland waters, ground waters, aquifers, drains and sewers;

(c) land, including the seabed or riverbed under any water as described above, and any surface land and sub-surface land; and

(d) human and animal health, and plant life;

"**Environmental Law**" means any statute or common law, or other requirement having the effect of law, in Ireland relating to the Environment, including without limitation the provisions of the Water Services Acts and Local Government (Water Pollution) Acts 1977 to 2007;

"**Environmental Protection Agency**" means the Environmental Protection Agency established pursuant to the Environmental Protection Agency Act, 1992;

"Force Majeure" means any event not within the reasonable control of a Party and which could not have been prevented or the consequences of which could not have been prevented by a Party acting and having acted as a Reasonable and Prudent Operator and which has the effect of preventing a Party from complying with its obligations under this Connection Agreement, including:

- acts of terrorists;

- war declared or undeclared, blockade, protest, revolution, riot, insurrection, civil commotion, invasion or armed conflict;

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- sabotage or acts of vandalism, criminal damage or the threat of such acts;

- extreme weather or environmental conditions including drought, extreme storms, lightning, fire, landslip, accumulation of snow or ice, natural disasters and phenomena including meteorites, the occurrence of pressure waves caused by aircraft or other aerial devices travelling at supersonic speeds, impact by aircraft, volcanic eruption, explosion including nuclear explosion, radioactive or chemical contamination or ionising radiation;

- any change of legislation, governmental order, restraint or directive having the effect of preventing or delaying the performance of any obligation hereunder;

- a strike or any other form of industrial actions by persons employed by the affected Party or by any local authority or by any contractor, subcontractor or agent of the affected Party;

- any strike which is part of a labour dispute of a national character occurring in Ireland or elsewhere;

- the act or omission of any contractor, subcontractor or supplier of either Party but only if due to an event which, but for the contractor, subcontractor or supplier not being a Party to the Connection Agreement, would have been Force Majeure;

- an outbreak of foot and mouth or any other restrictions put in place as part of a strategy to contain a communicable disease in Ireland; and

- the collapse of the euro currency;

provided that the following shall not constitute Force Majeure:

- lack of funds and/or the inability of a Party to pay; and

- mechanical or electrical breakdown or failure of machinery or plant owned or operated by either Party other than as a result of the circumstances identified above;

"Irish Water" means Irish Water (Uisce Éireann) a designated activity company incorporated in Ireland (company registration number 530363) and having its registered office at 24-26 Talbot Street, Dublin 1;

"**Legal Requirement**" means any Applicable Law, legislation or directive, regulation, requirement, instruction, direction or rule of any Competent Authority binding on either or all of the Parties to this Connection Agreement and includes any modification, extension or replacement thereof then in force;

"**Network**(s)" means the Waterworks and/or the Wastewater Works, as applicable and

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specified on the face of the Connection Offer, and any related lands, which are owned by, vested in, controlled or used by Irish Water;

"**PRA Compliant Map**" means ordinance survey plans, suitable for registration of any Deed of Grant of Wayleaves and Easements relating to property intended to be taken in charge by the local authority and the Connection Facilities to be vested in Irish Water together with all easements relating thereto suitably identified by the relevant symbols and/or colours designated by the Property Registration Authority.

"Public Road" means a road over which a public right of way exists and the responsibility for the maintenance of which lies on a road authority;

"**Reasonable and Prudent Operator**" means a person acting in good faith with the intention of performing its contractual obligations hereunder and in so doing and who in the general conduct of its undertaking exercises that degree of skill and diligence which would reasonably and ordinarily be exercised by a skilled and experienced operator complying with Applicable Law engaged in the same type of undertaking under the same or similar circumstances and conditions and the expression "**Standard of a Reasonable and Prudent Operator**" shall be construed accordingly;

"Regulator" means, where applicable, all present and future regulatory bodies having jurisdiction over Irish Water including, but not limited to, the Commission for Regulation of Utilities, the Environmental Protection Agency, the Minister of Housing, Planning and Local Government, the Office of the Data Protection Commissioner, the Competition and Consumer Protection Commission and/or any other statutory body or regulatory authority which regulates on an on-going basis or from time to time the business or operations of Irish Water;

"**Relevant Standards**" means the Connections and Developer Services Standard Details and Codes of Practice published and amended from time to time by Irish Water which are applicable to the Customer's Pipe Work and which are available on the Irish Water website (www.water.ie/Connections);

"Service Connection" means a water supply pipe or drainage pipe, together with any accessories and related fittings, extending from a Waterworks (where, as specified in the Connection Offer, the Customer requires connection to the Waterworks) or Wastewater Works (where, as specified in the Connection Offer, the Customer requires connection to the Wastewater Works) to the outer edge of the boundary to the curtilage of the Customer's Premises and used, or to be used as the case may be, for the purpose of connecting the Customer Premises with a Waterworks and/or Wastewater Works (as the case may be), and, if used or to be used for connecting more than one such premises it shall extend to the outer edge of the boundary to the curtilage of the premises which is furthermost from the said Waterworks and/or Wastewater Works (as the case may be);

"Sewage" and "**Sewage Effluent"** have the meanings assigned to them by the Local Government (Water Pollution) Acts 1977 to 2007;

"Sewers" means sewers of every description, excluding Storm Water Sewers, owned by,

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vested in or controlled by Irish Water, but does not include a Drain or Service Connection;

"Special Conditions" means any special conditions attached to the Connection Offer or as may be agreed from time to time;

"Storm Water" means run-off rainwater that enters any pipe;

"Storm Water Sewer" means any pipe or other conduit (a) used solely for the conveyance of Storm Water; or (b) designed or intended to be used for the conveyance of Storm Water (whether or not it is connected to a sewer by a 'storm water overflow' within the meaning of the Waste Water Discharge (Authorisation) Regulations 2007;

"Wastewater" means Sewage or other Sewage Effluent discharged, or to be discharged, to a Drain, Service Connection or Sewer but does not include Storm Water;

"**Wastewater Works**" means Sewers and their accessories, and all other associated physical elements used for collection, storage, measurement or treatment of Wastewater, and any related lands, which are owned by, vested in, controlled or used by Irish Water;

"Water Main" means water supply pipes owned by, vested in or controlled by Irish Water but does not include pipes, fittings and appliances to which the terms "Service Connection" or "Distribution System" apply;

"Water Services" means all services, including the provision of water intended for human consumption, which provide storage, measurement, treatment or distribution of surface water, ground water, and/or Wastewater collection, storage, measurement, treatment or disposal;

"Water Services Acts" means the Water Services Acts 2007 to 2017;

"Waterworks" means water sources, Water Mains and their accessories, and all other associated physical elements used for the abstraction, treatment, storage, measurement or distribution of water, and any related land, which are owned by, vested in, controlled or used by Irish Water;

"**Water Supply Maintenance Point**" means the point at which a Service Connection for water supply enters the boundary to the curtilage of the Customer's Premises.

2. **Interpretation**: Unless the context otherwise requires, any reference in this Connection Agreement to:

2.1 any gender includes the other;

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2.2 a statute, bye laws, regulation, delegated legislation or order is to the same as amended, modified or replaced from time to time and to any bye law, regulation, delegated legislation or order made thereunder;

2.3 any agreement, instrument or code is to the same as amended, novated, modified, supplemented or replaced from time to time;

2.4 unless otherwise specified any reference in this Connection Agreement to a "Clause" or "Appendix" is a reference to a Clause or Appendix in this Connection Agreement;

2.5 "**including**" means comprising but not by way of limitation to any event, class, list or category;

2.6 a "**Person**" shall be construed as a reference to any natural or legal person, firm, company, corporation, Government or Agency of a State or any association or partnership (whether or not having separate legal personality). A Person includes that person's legal or personal representative, permitted assigns and successors;

2.7 "**Party**" means a party to this Connection Agreement and "**Parties**" shall be construed accordingly;

2.8 the singular shall include the plural and vice versa;

2.9 words not otherwise defined that have well-known and generally acceptable technical or trade meanings in the water industry are used in this Connection Agreement in accordance with such recognised meanings;

2.10 where a word or expression is defined in this Connection Agreement, related words and expressions shall be construed accordingly;

2.11 headings are for ease of reference only and shall not affect its construction;

2.12 time shall be construed by reference to whatever time is applicable in Ireland; and

2.13 where a Party is required to use "**all reasonable endeavours**" that Party should explore all avenues reasonably open to it, and explore them all to the extent reasonable, but the Party is neither obliged to disregard its own commercial interests, nor required to continue trying to comply if it is clear that all further efforts would be futile; and

2.14 references to the "Commission for Regulation of Utilities" shall include any Competent Authority which may replace or succeed the Commission and assume its functions in relation to the regulation of the water industry in Ireland.

3. Defined Terms in Connection Offer: Terms which appear in uppercase in these General Conditions which are not otherwise defined shall have the meaning given to them in the Connection Offer.

4. Order of Precedence: In the event of inconsistency or conflict between the Connection Offer, the General Conditions and the Special Conditions, the following order of precedence will apply: (1) Special Conditions (2) General Conditions (3) Connection Offer.

5. Regulated Entity: Irish Water operates within a regulatory framework governed by the Regulators.

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6. **New Connection:** Irish Water shall charge and the Customer has agreed to pay in full the Connection Charge notified to the Customer in the Connection Offer. Following payment by the Customer, Irish Water shall perform or procure a third party to perform its obligations under the Connection Agreement and the Customer shall perform its obligations under the Connection Agreement.

7. **Sub-contractors/Agents:** The Customer acknowledges that Irish Water may sub-contract or engage an agent to perform certain of the obligations of Irish Water pursuant to the Connection Agreement, in which case, Irish Water shall not be relieved of any obligation or liability with respect to its rights or obligations under the Connection Agreement. The Customer shall have no recourse to any such third party; the Customer's sole recourse shall be to Irish Water in accordance with the Connection Agreement.

8. **Rights and obligations under law.** Nothing in this Connection Agreement shall affect or prejudice any rights, duties or obligations of the Parties under Applicable Laws.

9. **Principal Obligations:**

9.1 Subject to the terms of this Connection Agreement, Irish Water will carry out (or procure the carrying out) of Connection Works to facilitate the connection of the Customer's Premises to the Waterworks and/or Wastewater Works as specified in the Connection Offer).

9.2 The Customer will:

9.2.1 carry out its obligations pursuant to Clause 10 to facilitate the connection of the Customer's Premises to the Waterworks and/or Wastewater Works (as the case may be and as specified in the Connection Offer);

9.2.2 comply with all Relevant Standards and Applicable Laws and obtain all necessary easements, licences, permits or authorisations that may be required in connection with the performance of its obligations and its receipt of the Water Services pursuant to this Connection Agreement.

10. **Customer's Connection Obligations**:

10.1 The Customer shall:

10.1.1 make payment to Irish Water of the Connection Charge set out in the Connection Offer;

10.1.2 in a timely manner, provide, install, test and commission within the boundary to the curtilage of the Customer's Premises all Customer Pipework necessary to connect the Customer's Premises, Distribution System (if connection is to Waterworks) and Drain(s) (if connection is to Wastewater Works) to the Network(s) at the Connection Point(s) in accordance with Relevant Standards and Applicable Law;

10.1.3 provide safe, free and unrestricted access (which access may not be exclusive) for Irish Water and, and all parties acting on its behalf, to any

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land or premises of the Customer when reasonably required for the purposes of Irish Water's functions or in relation to this Connection Agreement;

10.1.4 if required by Irish Water in the Connection Offer and at the Customer's own cost, procure adequate way-leaves and easements from third party landowners for the Customer Pipe Work and the Connection Facilities (so that Irish Water and all parties acting on its behalf can establish and carry out the Connection Works) and if required by Irish Water:

10.1.4.1 deliver for approval by Irish Water the PRA Compliant Map;

10.1.4.2 where the Connection Facilities are not entirely comprised within the boundaries of the lands owned by the Customer, the Customer shall deliver to Irish Water a Deed of Grant of Wayleaves and Easements (in duplicate) for the benefit of Irish Water and the Connection Facilities, duly executed by the applicable landowner (to include without limitation a protected strip of ten metres, five metres on either side of the Connection Facilities, in respect of the full length of the Connection Facilities, unless an alternative strip width has been agreed in writing with Irish Water) TOGETHER WITH the PRA Compliant Map. The required form of Deed of Grant of Wayleaves and Easements will be provided by Irish Water on request;

10.1.4.3 irrevocably instruct its appointed solicitor to use best endeavours to stamp and register the Deed(s) of Wayleaves and Easements in the Property Registration Authority as soon as practicable at the Customer's expense and to provide notice of the relevant dealing number and evidence of such registration to Irish Water immediately following completion of registration **PROVIDED THAT** if requested by Irish Water the Customer shall consent to Irish Water taking over the registration process, and the Customer undertakes and agrees to assist Irish Water with this registration process following written request to do so;

10.1.4.4 specifically include reference and notice of the Deed(s) of Wayleaves and Easements in favour of Irish Water in any transfers, conveyances, assignment, lease and/or licence which it may have with any third party.

10.1.5 inform Irish Water, and all parties acting on its behalf, of any relevant safety precautions before entry to the Customer's Premises. Since Irish Water will not be aware of the specific hazards present on the Customer's Premises, the Customer is obliged to inform Irish Water of such hazards. The Customer must ensure that Irish Water, and all parties acting on its behalf, are either accompanied at all times by the Customer, or has been adequately briefed as to the presence of any specific hazards, the precautions that must be taken and what to do in the event of an accident or emergency;

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10.1.6 co-operate with and assist Irish Water, and all parties acting on its behalf;

10.1.7 not unreasonably interfere with or restrict the carrying out of Irish Water's obligations in accordance with this Connection Agreement;

10.1.8 not do or cause or permit to be done anything which causes, or could reasonably be expected to cause, damage or destruction to any part of the Connection Works or in any way interferes with its operation or materially interferes with Irish Water's (and all parties' acting on its behalf) access to same;

10.1.9 be solely responsible at all times for maintaining and keeping excavations and reinstatements on its property in a safe and secure condition and will indemnify and keep indemnified Irish Water, its servants, agents and contractors against all claims, demands, proceedings, damages and expenses whatsoever in respect thereof;

10.1.10 where there is to be a connection to the Waterworks, accept liability for the care, maintenance, renewal and repair of the Customer Pipework and the plumbing fixtures and fittings and associated pipework of the Distribution System up to the Connection Point where the Service Connection connects with the Distribution System, to ensure that such infrastructure complies at all times with Applicable Law including but not limited to European Union (Drinking Water) Regulations 2014 and any regulations that may be made under Section 54 of the Water Services Act 2007 or any bye-laws made by Irish Water. Irish Water shall accept no responsibility for the maintenance, renewal, adequacy, safety or other characteristics of such infrastructure, save that, in terms of water supply, Irish Water shall maintain and repair that part of the Service Connection extending from the Waterworks up to the Water Supply Maintenance Point;

10.1.11 where there is to be a connection to the Wastewater Works, accept liability for the care, maintenance, renewal and repair of the Customer Pipe Work and the plumbing fixtures and fittings and associated pipework of any Drains up to the Connection Point with the Service Connection to which those Drains are connected. Irish Water shall accept no responsibility for the maintenance, renewal, adequacy, safety or other characteristics of such infrastructure. Any Drain or Drains located within the boundary to the curtilage of the Customer's Premises and/or any system of Drains that drains more than one premises within the boundary to the curtilage of those Customer's Premises shall be the sole responsibility of the Customer; and

10.1.12 agree the timing of any works to be carried out by the Customer with Irish Water.

10.2 The Customer shall take such steps as Irish Water may notify from time to time to prevent a risk to human health or the environment, to facilitate the reasonable conservation of water, to ensure the proper and effective management of Water Services, to prevent contamination of any Waterworks (where there is to be a connection to the Waterworks), and to protect the Wastewater Works (where there

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is to be a connection to the Wastewater Works).

10.3 The Customer shall not allow discharge of rainwater runoff from roofs, paved areas or other surfaces into any Drain or Sewer, except as may be agreed in advance in writing with Irish Water.

10.4 During the duration of this Connection Agreement, Irish Water may specify any technical requirements or standards necessary to minimise the risk of leakage or to protect the integrity of any Waterworks or Wastewater Works.

10.5 For the avoidance of doubt, the Customer is prohibited from using the Service Connection and/or using any other mechanism to supply Water Services onwards to another location or premises other than the Customer's Premises notified to Irish Water by the Customer to which the Service Connection applies. Irish Water shall in no way be liable for a breach of this provision by the Customer or by any other third party, including any adverse consequences arising directly or indirectly as a result of such a breach and all costs, damages or claims arising therefrom.

10.6 The Customer hereby indemnifies Irish Water and its servants, agents and contractors in respect of any loss, damage or injury that may result from the laying or use of pipes within the boundary to the curtilage of the Customer's Premises. The Customer indemnifies Irish Water and its servants, agents and contractors in respect of any loss, damage or injury caused as a result of any leakage of Wastewater from Drains or Service Connections or water from the Distribution System up to the Connection Point where Service Connection connects with the Distribution System.

10.7 The Customer shall be solely responsible for preventing any backflow, back syphonage or blowback from the Distribution System of the Customer's Premises into the Water Main or Waterworks.

10.8 Where a connection is made to the Wastewater Works, Irish Water shall be entitled to take spot samples of the Wastewater discharged by the Customer for the purposes of testing compliance with the terms of this Connection Agreement and/or for general research or compliance purposes. If, in the opinion of Irish Water, the characteristics of the Customer's Wastewater are such that it is likely to produce what Irish Water determines to be a significant impact upon the Wastewater Works, then Irish Water may require the Customer to enter into a separate end-user agreement containing additional conditions in connection with the treatment of the Customer's Wastewater. The Customer acknowledges and agrees that it will, if requested to do so by Irish Water, cease discharging its Wastewater to the Network pending entry into the end-user agreement

11. Use of Water:

11.1 Where in the opinion of Irish Water, waste or deliberate misuse of water occurs on the Customer's Premises, Irish Water may restrict or reduce the pressure of the Water Services temporarily until satisfied that the waste or misuse has been rectified.

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11.2 The Customer may in times of water scarcity be required to limit the use of Water for essential purposes only as prescribed by Irish Water.

11.3 With the exception of customers covered under the Irish Water Domestic Customer Vulnerable Code of Practice, the Customer shall be responsible for installing and maintaining sufficient storage to provide a reserve water supply if that is necessary for any special needs which the Customer has for a specific rate of flow or pressure or if, taking account of any interruption to the Water Services which might occur due to works, a burst or any other reason, a prudent customer acting reasonably in order to protect its business needs would provide such storage.

11.4 The Customer shall ensure so far as practicable that all water is drawn at a reasonably regular rate of flow and pressure and shall use its storage facility to reduce peak demands being made upon the Waterworks by the Customer.

11.5 The provisions of this Clause 11 shall survive the termination or expiry of this Connection Agreement.

12. Time for Completion/Delays: Irish Water shall use commercially reasonable endeavours to ensure that the Connection Works are completed in a timely manner but Irish Water shall not be liable for any loss or damage suffered by the Customer in respect of delays resulting from any cause whatsoever.

13. Third Party Losses: The Customer shall indemnify Irish Water and its servants, agents and contractors, and hold Irish Water and its servants, agents and contractors harmless at all times from any and all losses of any third party incurred, suffered or sustained pursuant to this Connection Agreement, but only to the extent any such loss was not caused by Irish Water's breach of this Connection Agreement or the negligence of Irish Water in undertaking its obligations under this Connection Agreement.

14. Liability:

14.1 **Immunity:** Nothing in this Connection Agreement shall affect any immunity that Irish Water benefits from Applicable Law.

14.2 **Death or Personal Injury:** Subject to Clause 14.1 above, nothing in this Connection Agreement will exclude or limit the liability of either Party for death or personal injury resulting from the negligence of that Party or any other loss that cannot be excluded or limited under Applicable Law.

14.3 **Reasonable and Prudent Operator**: Subject to Clause 14.2, where the obligations of Irish Water are performed in accordance with the Standard of a Reasonable and Prudent Operator, Irish Water shall have no liability whatsoever to the Customer in respect of this Connection Agreement.

14.4 **No liability for Force Majeure:** Neither Party shall be liable for any breach of this Connection Agreement directly or indirectly caused by Force Majeure.

14.5 **No Liability:** Neither Party shall be liable to the other Party in contract, tort, warranty, strict liability or any other legal theory for: (a) any loss of profit, revenue,

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use, contract (other than this Connection Agreement), opportunity, or goodwill; or (b) punitive or exemplary damages; or (c) any indirect, consequential, incidental or special damages (including punitive damages).

14.6 **No implied warranties:** All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from this Connection Agreement.

15. Assignment: The Customer shall not be entitled to assign the benefit or transfer the burden of this Connection Agreement without the prior written consent of Irish Water. Nothing shall prevent Irish Water from assigning the benefit or transferring the burden of this Connection Agreement to an Affiliate.

16. Sub-contractors: Either Party shall have the right to sub-contract or delegate the performance of any of its obligations or duties arising under this Connection Agreement without the prior consent of the other Party. Such subcontracting by Irish Water or the Customer of the performance of any obligations or duties under this Connection Agreement shall not relieve Irish Water or the Customer (as the case may be) from liability for performance of such obligation or duty.

17. Customer's Authority: The Customer represents and warrants to Irish Water that it has full power and authority to enter into and to exercise its rights and perform its obligations under this Connection Agreement and has obtained all authorisations and consents necessary for it to so enter, exercise rights and perform obligations and such authorisations and consents are in full force and effect.

18. Term & Termination:

18.1 This Connection Agreement shall commence upon the date that the Customer returns the Customer Acceptance Form and pays the Connection Charge (and if these occur on different days, the Connection Agreement shall commence on the later date) and shall continue in full force and effect until the Parties' respective obligations under Clause 9 have been performed in full unless it is earlier terminated in accordance with the provisions of this Connection Agreement.

18.2 The Connection Offer and this Connection Agreement is based on a high-level desk top analysis carried out by Irish Water on the feasibility of a carrying out the Connection Works for the Customer Premises. Once the Connection Offer has been accepted by You, Irish Water will begin a detailed design of the Connection Works. If during the process of detailed design Irish Water, at its discretion, forms the opinion (acting reasonably) that either:

A. the Connection Works are not feasible or practicable or safe to complete; or
B. the acquisition of all rights for the laying of the Customer Pipe Work and/or the Connection Works are not possible or commercially practicable; or
C. the Connection Works would involve the expenditure by Irish Water of monies in excess of that provided for by way of the Connection Charge,

then the Connection Agreement may be terminated by Irish Water by way of written notice to the Customer. In the event that Irish Water exercises its right to terminate the Connection Agreement on the basis of the foregoing then Irish Water shall return

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any Connection Charge paid by the Customer, less (if deemed appropriate by Irish Water) any outstanding costs and expenses incurred by Irish Water as at the date of termination. This provision is additional to and does not replace any other provisions relating to termination.

18.3 Irish Water shall be entitled to terminate this Connection Agreement by written notice to the Customer if the Customer sells the Customer Premises to a third party.

18.4 The Customer shall be entitled to terminate this Connection Agreement upon written notice to Irish Water within 14 days of the date of this Connection Agreement.

18.5 Either Party shall be entitled to terminate this Connection Agreement upon written notice to the other Party where:

18.5.1 there is in any material breach by the other Party of its obligations under this Connection Agreement and the breach cannot be remedied or if it is capable of being remedied, it has not been remedied by such Party within 28 days of the issue of a notice to it by the other Party identifying the breach and requiring it to be remedied; and

18.5.2 an event of Force Majeure persists for a period of 180 days or more, provided at least 14 days' notice of termination has been given in writing.

18.6 In the event that either Party exercises its right to terminate under this Clause before the Connection Works commence, Irish Water shall return any Connection Charge paid by the Customer, less any outstanding costs and expenses incurred by Irish Water as at the date of termination, including, but not limited to, costs of construction, and any legal or financing costs.

18.7 Termination of this Connection Agreement shall not prejudice or affect any right of action or remedy which shall have accrued or shall thereafter accrue to either Party under this Connection Agreement.

18.8 Without prejudice to Clause 18.7, in particular, the following clauses:

Clause 4 (Order of Precedence);
Clauses 10.1.1, 10.1.9, 10.1.10, 10.1.11, 10.2, 10.3, 10.5, 10.6, 10.7 and 10.8;
Clause 11 (Use of Water);
Clause 13 (Third Party Losses);
Clause 14 (Liability);
Clause 18 (Term and Termination);
Clause 20 (Insurance)*;*
Clause 26 (Entire Agreement);
Clause 21 (Data Protection);
Clause 29 (Governing Law); and
Clause 30 (Disputes),

of this Connection Agreement shall continue in full force and effect and be fully binding on the Parties notwithstanding termination or expiry.

19. Notices:

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19.1 Notices or other communications given pursuant to this Connection Agreement shall be in writing and shall be sufficiently given if delivered by hand or sent by e-mail or pre-paid registered post to the e-mail or postal address referred to below of the Party to which the notice or communication is being given or to such other address and as such Party shall communicate from time to time to the Party giving the notice or communication.

19.2 The Customer's address for service is as set out in the Connection Offer.

19.3 Any notice required or permitted to be given by the Customer shall be in writing addressed to Irish Water at Irish Water, PO Box 860, South City Delivery Office, Cork City or by email to newconnections@water.ie or such other address or electronic mail address as may be notified by the Customer to Irish Water from time to time.

19.4 Every notice given in accordance shall be deemed to have been received as follows:

Means of Dispatch	Deemed Received
Hand Delivery	The time of delivery.
Post	48 hours after posting (and proof that the envelope containing the notice or communication was properly addressed and sent by pre-paid registered post will be sufficient evidence that the notice or other communication has been duly served or given).
Email	Upon receipt by the addressee of the complete text in legible form.

provided that if, in accordance with the above provisions, any such notice or other communication would otherwise be deemed to be given or made outside working hours (being 9am to 5.30pm on a Business Day) such notice or other communication shall be deemed to be given or made at the start of working hours on the next Business Day.

20. Insurance:

20.1 The following insurance obligations will apply in the alternative depending on whether the Customer's Premises is a:

20.1.1 *single domestic unit* (see Clause 20.2 below); or
20.1.2 *a small non-domestic development* (where the connection to the Customer's Premises is proposed to be a 25mm water supply Service Connection and/or a 100mm Wastewater Service Connection)(see Clause 20.2 below); or
20.1.3 a development *other than* a single domestic unit or a small non-domestic unit (see Clause 20.3 below).

20.2 Where this Connection Agreement relates to a *single domestic unit* or *a small non-domestic development*, the Customer shall ensure that any Contractor engaged by

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them in relation to the Customer's Pipe Work has appropriate and adequate insurance cover in place throughout the duration of the works in relation to the matters referred to in Clause 10.

20.3 Where this Connection Agreement relates to developments *other than* a single domestic unit or a small non-domestic development, the Customer shall ensure that any Contractor engaged by them in relation to the Customer's Pipe Work has appropriate and adequate insurance cover in place throughout the duration of the works in relation to the matters referred to in Clauses 10. In particular, the Customer shall, within five days following a written request from Irish Water, furnish Irish Water with evidence that the insurances referred to below are being maintained by the Contractor:

20.3.1 **Employers Liability** insurance cover with a minimum indemnity limit of €13 million any one accident/occurrence unlimited in the period of insurance;
20.3.2 **Public/Products/Pollution Liability** insurance cover with a minimum indemnity limit of €6.5 million any one accident/occurrence unlimited in the period of insurance under the Public Liability and in the aggregate in respect of Products & Pollution Liability;
20.3.3 **Contractors "All Risks"** insurance for the full reinstatement value of the proposed works in respect of any one claim; and
20.3.4 **Motor** insurance cover with a minimum third party property damage limit of €6.5m for all vehicles owned, leased, rented or run (to include tool of trade use) by the Contractor in connection with the services to be provided by it.

The Insurance policies detailed in this Clause 20.3 with the exception of Motor must include a specific indemnity to Irish Water.

21. Data Protection:

21.1 It is necessary for Irish Water to collect and use personal data relating to the Customer in respect of this Connection Agreement, such as your name, address, contact details and financial information (depending on payment method). This data will be used to enable Irish Water to carry out its obligations under this Connection Agreement and manage its relationship with the Customer, such as arranging payments, visits to the Customer's Premises and scheduling construction activities. Irish Water may keep the Customer's data for a reasonable period after the Customer ceases to be supplied with Water Services but will not keep it for any longer than is necessary and/or as required by law.

21.2 Irish Water may share the Customer's data with other members of the Ervia group and agents who act on behalf of Irish Water in connection with the activities referred to above. Such agents are only permitted to use the Customer's data as instructed by Irish Water. They are also required to keep the Customer's data safe and secure.

21.3 From time to time the Customer may speak to employees of Irish Water (or agents acting on its behalf) by telephone. To ensure that Irish Water can provide a quality service, telephone conversations with the Customer may be recorded. Irish Water will treat the recorded information as confidential and will only use it for staff training/quality control purposes, confirming details of the Customer's conversations with Irish Water or any other purposes mentioned in this notice.

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21.4 The Customer has various rights under data privacy laws, which include the right to request a copy of his/her personal data. If the Customer wishes to avail of this right or for further information please contact Irish Water in writing at FREEPOST, Irish Water, Data Protection Officer, PO Box 6000, Talbot Street, Dublin 1 or via email to dataprotection@ervia.ie.

21.5 Irish Water endeavours to use appropriate technical and physical security measures to protect your personal data which is transmitted, stored or otherwise processed by Irish Water, from accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access. Irish Water's service providers are also selected carefully and required to use appropriate protective measures.

21.6 As effective as modern security practices are, no physical or electronic security system is entirely secure. The transmission of information via the internet is not completely secure. Although Irish Water will do its best to protect your data, Irish Water cannot guarantee the security of your data transmitted to Irish Water's Site. Any transmission of data is at your own risk. Once Irish Water receives your data, Irish Water will use appropriate security measures to seek to prevent unauthorised access. Irish Water will continue to revise policies and implement additional security features as new technologies become available.

21.7 In the event that there is an interception or unauthorised access to your personal data, Irish Water will not be liable or responsible for any resulting misuse of your personal information.

21.8 For further information on how Irish Water treats the Personal Data of Customers when providing Water Services, please see our Privacy Notice on www.water.ie. Alternatively, please contact us at the details above for Irish Water's Privacy Notice.

21.9 In order to evaluate and improve our Customer's experience, we or agents on our behalf, may from time to time issue surveys to the Customer in relation to the services provided. If you do not wish to receive a survey, please let us know.

21.10 Irish Water reserves the right to change and/or update its Privacy Notice at any time in Irish Water's sole discretion. If Irish Water makes changes, Irish Water will publish same on www.water.ie.

22. Safety, Health and Welfare at Work (Construction) Regulations 2013: It is acknowledged and agreed that the works carried out for, or on behalf of, the Customer in relation to the Customer's Pipe Work are entirely separate and distinct to the Connection Works carried out for and on behalf of Irish Water. The Customer shall ensure full compliance with all applicable health and safety legislation including, if necessary and applicable, the Safety, Health and Welfare at Work (Construction) Regulations 2013 in respect of the works to the Customers Pipe Work. The Customer acknowledges that, as client, it may have certain obligations under the Safety, Health and Welfare at Work (Construction) Regulations 2013 in relation to the works to the Customer's Pipe Work and, as such, will ensure full compliance with those obligations. Irish Water shall ensure full compliance with all applicable health and safety legislation including, if necessary and applicable, the Safety, Health and Welfare at Work (Construction) Regulations 2013 in respect of the Connection Works. Irish Water acknowledges that, as client, it may have

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certain obligations under the Safety, Health and Welfare at Work (Construction) Regulations 2013 in relation to the Connection Work and, as such, will ensure full compliance with those obligations.

23. No Waiver: No forbearance, indulgence or relaxation on the part of a Party shown or granted to the other Party shall in any way affect, diminish, restrict or prejudice the rights or powers of Irish Water or operate as or be deemed to be a waiver of any breach of conditions. None of the provisions of this Connection Agreement shall be considered waived by a Party unless such waiver is given in writing and signed by a duly authorised representative of the Party making the waiver. No such waiver shall be a waiver of any past or future default or breach nor shall such waiver constitute a modification of any term provision condition or covenant of the contract unless expressly so provided in such waiver.

24. Severability: All of the provisions contained in this Connection Agreement are distinct and severable, and if any provision is held or declared to be unenforceable, illegal or void in the whole or in part by any court, regulatory authority or other Competent Authority it will, to that extent only, be deemed not to form part of this Connection Agreement and the enforceability, legality and validity of the remainder of these terms and conditions will not in any event be affected.

25. Force Majeure: If either Party is by reason of Force Majeure rendered unable wholly or in part to carry out its obligations under this Connection Agreement, then upon notice in writing of such Force Majeure from the Party affected to the other Party, as soon as possible after the occurrence of the cause relied on, the Party affected shall be released from its obligations (other than the obligations to pay money) and suspended from the exercise of its rights under the Connection Agreement to the extent to which they are affected by the circumstances of Force Majeure and for the period during which those circumstances exist PROVIDED THAT the Party affected shall use all reasonable endeavours to prevent, avoid, overcome or mitigate the effects of such occurrence.

26. Entire Agreement:

26.1 This Connection Agreement shall be the entire agreement between the Parties with respect to the subject matter and expressly excludes any warranty, condition or other undertaking implied at law or by custom and supersedes all previous agreements and understandings between the Parties (other than as provided for in this Connection Agreement) with respect to its subject matter.

26.2 The Customer acknowledges and confirms that it does not enter into this Connection Agreement in reliance on any representation, any misrepresentation, warranty or other undertaking by Irish Water not fully reflected in this Connection Agreement.

26.3 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from this Connection Agreement.

27. Amendments: This Connection Agreement may be updated at any time by Irish Water with replacement terms and conditions published on www.water.ie.

28. No Derogation from Statutory Responsibilities:

The Customer acknowledges and accepts:

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28.1 their obligations and duties under the Water Services Acts in relation to the protection of human health, repair of leaks and the reasonable conservation of water and the management, consumption and use of water on or at the Customer's Premises to ensure that water is not wasted or consumed in excessive amounts;

28.2 that notwithstanding this Connection Agreement, Irish Water is not limited from exercising its powers under the Water Services Acts in relation to the Customer;

28.3 without prejudice to Clauses 10.1.10 and 10.1.11 of these General Conditions and notwithstanding the carrying out of Connection Works, the Customer Pipe Work (in terms of ownership, maintenance, repair, renewal or otherwise) will remain the sole responsibility of the Customer unless ownership is transferred to Irish Water.

29. Governing Law: The Connection Agreement shall be governed and construed in accordance with the laws of Ireland and, subject to Clause 30, the courts of Ireland shall have exclusive jurisdiction to decide disputes arising between the Customer and Irish Water.

30. Dispute Resolution:

30.1 **Notification of a Dispute:** Any Dispute between the Parties shall be resolved, if possible, by negotiation. In the event that no agreement is reached within fifteen (15) days of the date on which either Party first notified the other Party that a Dispute exists, either Party shall have the right to have the Dispute determined in accordance with Clause 30.2.

30.2 **Mediation:** The mediator is to be appointed by agreement between the Parties and, in the absence of agreement within five (5) working days of the receipt by one Party of a written notice to concur in the appointment of a mediator, by the Centre for Effective Dispute Resolution ("**CEDR**"). The mediation will be in Dublin and the costs of the mediation shall be shared equally between the Parties. In the event that the matter is not resolved within three (3) months of being referred to the mediator under this Clause 30.2, then either Party may (but for the avoidance of doubt not be obliged to do so) commence court proceedings for the determination of the Dispute in question.

30.3 **Performance to Continue During Dispute:** Insofar as practicable, the Parties shall continue to implement the terms of this Connection Agreement notwithstanding the initiation of mediation or Court proceedings and any pending Dispute. No payment due to or payable by Irish Water or the Customer shall be withheld on account of a pending reference to the dispute resolution mechanism except to the extent that such payment is the subject of such dispute. However, Irish Water shall not be obliged to carry out the Connection Works unless it is in receipt of the Connection Costs.

30.4 **Survival:** The provisions of Clause 30.2 and 30.3 shall continue after the termination of this Connection Agreement where notice of the existence of the Dispute was given under Clause 30.1 prior to termination. Nothing in this Connection Agreement is intended to prejudice the referral of a dispute to the

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Commission for Regulation of Utilities for determination in accordance with Irish Water's Customer Handbook.

31. New Industry Structure

31.1 If, after execution of this Connection Agreement, there shall be enacted and brought into force any Legal Requirement for:

31.1.1 the further reorganisation of the water industry in Ireland or any material part of it;

31.1.2 the further facilitation of the introduction of third party interests into the affairs of the water industry in Ireland or any part of it; or

31.1.3 the amendment or variation of any policy of Irish Water or the manner in which the Network(s) and any agreements or protocols related thereto are organised;

which necessitates a variation to this Connection Agreement, the Parties shall effect such changes as are reasonably necessary so as to ensure that the operations contemplated by this Connection Agreement shall be conducted in a manner which is consistent with the effect of the new Legal Requirement and most closely reflects the intentions of the same with effect from the date thereof provided that any such amendment will be of no greater extent than is required by reason of the same.

31.2 If any variation proposed under Clause 31.1 has not been agreed by the Parties within three (3) months of it being proposed (the Parties acting as soon as reasonably practicable), either Party may refer to the Commission for Regulation of Utilities for determination and the Parties agree to abide by and to give effect to the Commission's determination, if necessary by entering into an agreement supplemental to this Connection Agreement.

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APPENDIX 3

Special Conditions

Notes

SECTION 3.0 – Special Conditions pertaining to the Water/Wastewater Service Connection(s)

SECTION 3.1 - Water Service Connection(s)

1	Distance from Customer's Premises to Connection Point in metres (Service Connection).	22.00	m
2	Diameter of Service Connection required (external diameter in mm).	150.00	mm
3	Diameter of meter required (external diameter in mm).	150.00	mm
4	Distance from Service Connection Point to the existing mains in metres (Mains Extension).		m
5	Irish Water will deliver the full physical connection works on the public side from its Network(s) to your property boundary		
6			
7	The design & construction of the new proposed water connection to be in accordance with the IW Codes of Practice and Standard Details. These are available from the IW website		
8	Once the offer has been accepted with payment and signed counterpart returned, Irish Water will commence the design of the Connection Works and obtain all relevant statutory approvals including obtaining a Road Opening Licence (ROL) to allow the Works commence. It may take some time to obtain the ROL. Once these approvals are in place and design stage is complete we will contact you 14 days in advance of the proposed connection works taking place.		

SECTION 3.2 - Wastewater Service Connection(s)

1	Distance from Customer's Premises to Connection Point in metres (Service Connection).	0.00	m
2	Diameter of Service Connection required (internal diameter in mm).	225.00	mm
3	Distance from Service Connection Point to the existing mains in metres (Mains Extension).		m
4	Discharge Licence must be obtained prior to any physical connection to IW infrastructure being made.		
5	The Customer is responsible for delivering the full connection works including obtaining a Road Opening Licence from the relevant Authority. Irish Water/Local Authority Water Services Department (Agents to IW) will supervise the physical connection to the Irish Water network.		
6	The customer should contact the Meath County Council water services department (Agents to Irish Water) to organise the physical connection on .		
7	The design & construction of the new proposed wastewater connection to be in accordance with the IW Codes of Practice and Standard Details. These are available from the IW website		
8	No storm runoff shall drain to the public foul sewer		
9			
10			

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APPENDIX 4

Connection Charge

Connection Charge		
Water Connection Charge		
	Standard Charge	€113,545.00
	Standard Charge – Additional Service Length	€0.00
	Quotable Charge	€9,827.81
	Sub total	**€123,372.81**
Wastewater Connection Charge		
	Standard Charge	€23,344.00
	Standard Charge – Additional Service Length	€0.00
	Quotable Charge	
	Sub total	**€23,344.00**
Total Connection Charge		**€146,716.81**

APPENDIX 14.2

IRISH WATER CONNECTION OFFER

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Shane Rife
Shannon Building
Burlington Road, Dublin 4
Dublin
D04HH21

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

CONNECTION OFFER

To: Shane Rife

Amazon Data Services LTD (ADSIL)

Shannon Building
Burlington Road, Dublin 4
Dublin
D04HH21

(the "**Customer**")

Connection Reference: CDS2000232101

Date: 28 May 2020

SUBJECT TO CONTRACT

Re: Providing a Water & Wastewater Service Connection between

the "**Network(s)**"

AND

Drogheda IDA Business Park
Donore Road, Drogheda

Louth

(the "**Customer's Premises**")

Dear Sir/Madam,

Following receipt of your application for a connection to the Network(s) (the "**Customer Application**"), Irish Water is pleased to offer you ("**You**" or the "**Customer**"), a connection between the Network(s) and the Customer's Premises, subject to and in accordance with the conditions set out in this Connection Offer (the "**Connection Offer**"), the General Conditions for a Water and/or Wastewater Connection (the "**General Conditions**", copy attached in Appendix 2) and any Special Conditions pertaining to this connection (the "**Special Conditions**", as may be attached in Appendix 3).

Stiúrthóirí / Directors: Cathal Marley (Chairman), Niall Gleeson, Eamon Gallen, Yvonne Harris, Brendan Murphy, Maria O'Dwyer
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin 1, D01 NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Irish Water is a designated activity company, limited by shares.
Uimhir Chláraithe in Éirinn / Registered in Ireland No.: 530363

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This Connection Offer is conditional upon payment of the Connection Charge and the return of the signed Letter of Acceptance (the form of which is included at Appendix 1 to this Connection Offer).

(Please note that capitalised terms not otherwise defined within this Connection Offer shall have the meaning given to them in the General Conditions)

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1. Connection Agreement

We enclose a Letter of Acceptance for your consideration.

We would encourage You to read the entirety of this Connection Offer and the Connection Agreement. If You are satisfied with these and wish to proceed, please:

- sign the Letter of Acceptance and return it to **Irish Water, PO Box 860, South City Delivery Office, Cork City**. Alternatively, You can send back a scanned version of the signed Letter of Acceptance to newconnections@water.ie; and

- pay the Connection Charge in accordance with section 3 below.

You and Irish Water acknowledge that there shall be no intention to create any legally binding contract between You and Irish Water unless and until You have completed the above steps.
If, in the opinion of Irish Water, You have not returned the Letter of Acceptance or paid the Connection Charge, no contract shall come into force.

Once the signed Letter of Acceptance has been returned **and** the Connection Charge has been paid, the Connection Agreement shall become legally binding on You and Irish Water and the Connection Works can be carried out. The Connection Agreement is comprised of this Connection Offer, the General Conditions and any Special Conditions. In the event of any conflict or inconsistency between these documents, they shall apply in the following order:

i. Special Conditions
ii. General Conditions
iii. Connection Offer.

Any decision by Irish Water to enter into a Connection Agreement with You is made in reliance on the information in and with Your Customer Application. If the information supplied is incorrect or incomplete, Irish Water reserves the right to apply additional Connection Charges and contract terms.

Irish Water's decision to make a Connection Offer to You is made in reliance on the information contained in and submitted with the Connection Application. If the information supplied is incorrect or found to be materially inaccurate in any way, Irish Water reserves the right to apply additional Connection Charges, to impose additional contract terms and/or take any steps in accordance with the General Conditions.

This Connection Offer is based on a high-level desk top analysis carried out by Irish Water on the feasibility of a connection for your Development. Once the Connection Offer has been accepted by You, Irish Water will begin a detailed design of the connection. If during the process of detailed design Irish Water, at its discretion, forms the opinion (acting reasonably) that either:

A. a connection to your Development is not feasible or practicable or safe to complete; or
B. a connection to your Development would involve the expenditure by Irish Water of monies in excess of that provided for by way of the Connection Charge,

then the Connection Agreement may be terminated by Irish Water in accordance with General Condition 18.

The Connection Agreement shall constitute the entire agreement between You and Irish Water.

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Any reference in this Connection Offer to an Appendix is to an appendix to this Connection Offer.

2. Validity of Connection Offer

You have 90 days from the date of this Connection Offer to accept the Connection Offer by returning the Letter of Acceptance **and** paying the Connection Charge. Thereafter, the Connection Offer shall lapse unless otherwise agreed in writing by Irish Water.

3. Connection Charge

The Connection Charge(s) shall be determined in accordance with Irish Water's Connection Charging Policy as set out in the Water Charges Plan (which can be found at www.water.ie/connections)

The Water Connection charge is €123,372.81
The Wastewater Connection charge is €23,344.00
The Total Connection Charge is €146,716.81 ("**Connection Charge**"). A breakdown of the Connection Charge is set out in Appendix 4.

Payment of the Connection Charge can be made by:
A. Cheque, made payable to "Irish Water" or
B. Money Transfer, by EFT to the following bank account:

Allied Irish Bank, 40/41 Westmoreland Street, Dublin 2, Ireland.

Account Name	BIC	IBAN
IW AR-EFT	AIBKIE2D	IE29 AIBK 9333 8464 3085 94

Please note that You must quote the Irish Water reference number specified above in any communications and when making payment (see 'Our Reference' on the first page of this letter). The Connection Charge will only be deemed paid when funds have cleared in Irish Water's bank account.

4. Connection Works

Once the Connection Offer has been validly accepted, Irish Water or its agent shall make contact with You to schedule the Connection.

5. Distribution System, Drains and Service Connection

You are responsible for providing, maintaining and renewing the Distribution System and/or Drains and Service Connection required for the provision of Water Services (see General Condition 10).

6. Cancellation by the Customer

You may cancel the proposed Connection by writing to Irish Water at the contact address set out below within fourteen (14) Business Days of returning the Letter of Acceptance:

- noting that you wish to cancel the Connection; and
- quoting the reference number set out above (see 'Our Reference' on the first page of this letter);

No charges will be incurred by You unless the Connection or part thereof has already been carried out with your agreement. If You cancel the Connection in accordance with this paragraph, Irish Water will refund any payment which You have already made for the proposed Connection, subject to any costs that may have already been incurred by Irish water in the provision of the Connection.

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7. Queries

If You have any queries in relation to the payment of the Connection Charge or otherwise, please contact Irish Water's Customer Service Department at:

Telephone:	1850 278 278 or +353 1 707 2828
Email:	newconnnections@water.ie
Web:	www.water.ie/contact-us

8. Disputes

Any dispute in respect of the terms of this Connection Offer (including in relation to the Connection Charge) may be referred to the Commission for Regulation of Utilities for determination.
Once a legally binding Connection Agreement comes into force, all disputes in relation to your agreement with Irish Water shall be resolved pursuant to General Condition 30 of the General Conditions (attached).

9. Next Steps

- **Accepting the Offer**: sign and return the Letter of Acceptance and pay the Connection Charge.
- **Customer Construction Phase**: If required, Irish Water or its agent will contact You in relation to the connection assets required to facilitate your connection to the Network(s).
- **Connection to Network(s)**: Irish Water or its agent will contact You to arrange a suitable time to complete the Connection Works.

We look forward to hearing from You.

Yours sincerely,

M Dwyer

Maria O'Dwyer,
Connections and Developer Services Manager
For and on behalf of Irish Water

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Appendix 1

Letter of Acceptance

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Letter of Acceptance

[to be returned to Irish Water]

Irish Water

PO Box 860

South City Delivery Office

Cork City

I/we have read, understood, accept and agree to comply in full with the terms of the Connection Offer dated 28 May 2020, the General Conditions and any Special Conditions (which together constitute the Connection Agreement).

I/we further understand and acknowledge that there shall be no intention to create any legally binding contract between me/us and Irish Water unless and until I/we have completed, signed and returned this Letter of Acceptance and paid the Connection Charge.

I/we have made payment for Connection Reference CDS2000232101 via

Electronic Funds Transfer EFT ☒
Cheque ☐

Customer address: One Burlington Plaza, Burlington Road, Dublin 4, Ireland

Customer's signature: DocuSigned by: JAMES MOLONEY B277ZBA57074145D

For and on behalf of: Amazon Data Services Ireland Limited

Print full name of Customer in BLOCK letters: JAMES MOLONEY

Date: July 31, 2020

Connection Reference: CDS2000232101

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Letter of Acceptance

[Customer Copy]

[to be retained by Customer]

I/we have read, understood, accept and agree to comply in full with the terms of the Connection Offer dated [___*insert date*_____], the General Conditions and any Special Conditions (which together constitute the Connection Agreement).

I/we further understand and acknowledge that there shall be no intention to create any legally binding contract between me/us and Irish Water unless and until I/we have completed, signed and returned this Letter of Acceptance and paid the Connection Charge.

I/we have made payment for Connection Reference CDS2000232101 via

Electronic Funds Transfer EFT ☐
Cheque ☐

Customer address: _____

Customer's signature: _____

For and on behalf of: _____

Print full name of Customer in BLOCK letters: _____

Date: _____

Connection Reference: CDS2000232101

APPENDIX 2

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General Conditions

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IRISH WATER

General Conditions for a Water and/or Wastewater Connection

(Version 0.2)

February 2019

DocuSign Envelope ID: A5578780-756E-48CF-A9D2-33576DBE4CCA

General Conditions for a Water and/or Wastewater Connection
(the "General Conditions")

1. **Definitions:** In these General Conditions the following definitions apply:

"Affiliate" of a Person means any subsidiary or holding company (within the meaning given to such expressions by the Companies Act 2014) of such Person or any subsidiary of any such holding company;

"Applicable Law" means all Acts of the Oireachtas, statutory instruments, regulations, orders and other legislative provisions which in any way relate to the Connection Agreement, including the Water Services Acts, the Building Regulations, the Construction Regulations and any code or guidance as may be issued from time to time by any Regulator or relevant industry authority. Any reference to "Applicable Law" or any enactment or statutory provision is a reference to it as it may have been, or may from time to time be amended, modified, consolidated or re- enacted;

"Building Regulations" mean the Building Control Acts 1990 to 2014 and all subordinate legislation and regulations made pursuant to the said Acts including, without limitation the Building Control Regulations 1997 to 2017 and relevant codes of practice, and any amendment, update or replacement or repeal thereof;

"Business Day" means every day other than a Saturday or Sunday or bank or public holiday in Ireland;

"**Competent Authority**" means any local or national or supra-national agency, authority, department, inspectorate, ministry, official or public or statutory Person (whether autonomous or not) or regulatory authority of Ireland or of the European Union which has jurisdiction over any of the Parties to the Connection Agreement and the subject matter of the Connection Agreement, including the Commission for Regulation of Utilities but excluding a court or tribunal of competent jurisdiction;

"Connection Charging Policy" means the Irish Water Connection Charging Policy which may be found at www.water.ie/connections;

"Connection Offer" means the conditional offer letter issued by Irish Water to the Customer relating to the connection of the Customer's Premises to the Network(s) and which forms part of the Connection Agreement;

"Connection Agreement" means the agreement between the Customer and Irish Water to facilitate the connection of the Customer's Premises to the Network(s), which shall be comprised of the Connection Offer (including the appendices thereto), the General Conditions and the Special Conditions (if any);

"Connection Charge" means the charge for connecting to the Irish Water Waterworks and/or Wastewater Works (as the case may be), as specified in the Connection Offer. The Connection Charge shall only be deemed paid when funds have cleared in Irish Water's bank account;

"**Connection Facilities**" means the facilities (including the Service Connection(s)) required

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to be constructed and/or upgraded and installed by Irish Water in order to connect the Customer's Pipe Work to the Network(s);

"Connection Point(s)" means a location or locations to be determined by Irish Water (which may be outside the boundary to the curtilage of the Customer's Premises) at which the Customer's Pipe Work is to be connected to the Waterworks (where, as specified in the Connection Offer, the Customer requires connection to the Waterworks) or the Wastewater Works (where, as specified in the Connection Offer, the Customer requires connection to the Wastewater Works) (via the Service Connection(s)). Connection Points may differ for both the Waterworks and Wastewater Works;

"Connection Works" means the permanent and temporary works and services to be performed by or on behalf of Irish Water in the acquisition, design, procurement, construction and installation of the Connection Facilities and the obtaining of permits and the tie-in and commissioning of a Connection Point(s) in accordance with the requirements of this Connection Agreement;

"**Construction Regulations**" means the Safety Health and Welfare at Work Act 2005, the Safety Health and Welfare at Work (General Application) Regulations 2007 to 2016 as amended, the Safety Health and Welfare at Work (Construction) Regulations 2013 as amended and any guidance requirements issued from time to time from the Health and Safety Authority;

"Customer" means the person or entity to whom the Connection Offer is addressed and who has entered into the Connection Agreement with Irish Water;

"Customer's Pipe Work" means the pipe, relating fittings and associated accessories to be laid by the Customer within the boundary of the Customer's Premises in accordance with Relevant Standards and Applicable Laws, , and the Distribution System (if connecting to the Waterworks) and the Drain (if connecting to the Wastewater Works), to be used to connect the Customer's Premises at a Connection Point;

"Customer's Premises" means the premises identified as such in the Connection Offer, including any part of any public or private building, vessel, vehicle, structure or land (whether or not there are structures on the land and whether or not the land is covered with water), and any plant or related accessories on or under such land, or any hereditament of tenure, together with any out-buildings and curtilage and which is:

- receiving Water Services; or

- specified in an application for Water Services completed by the Customer; or

- a premises deemed to be a premises by Irish Water; or

- such other premises as may be notified by the Customer to Irish Water and accepted in writing by Irish Water from time to time, but does not include land which is a Public Road, a road which is the subject of an order under Section 11 of the Roads Act 1993 or a road which has been taken in charge by a local

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authority pursuant to a non-statutory local authority taking in charge scheme;

"Deed(s) of Grant of Wayleaves and Easements" means the Deed(s) of Grant of Wayleaves and Easements referred to in Clause 10 hereof;

"**Dispute**" means a difference or dispute between the Parties arising out of or in connection with this Connection Agreement;

"Distribution System" means a pipe and its related fittings, that is used or to be used as the case may be to convey water into or through one or more Customer's Premises (including any related internal or external taps) excluding a Service Connection;

"Drain" means a drainage pipe, or system of such pipes and related fittings for collection of Wastewater, that is not owned by, vested in or controlled by Irish Water, and that is not a Service Connection, which is used or to be used as the case may be, to convey Wastewater from one or more Customer's Premises or to any wastewater treatment system on a Customer's Premises where the Wastewater is generated;

"**Environment**" means the environment generally, including all physical, biological and ecological aspects of the environment and:

(a) air, including that within buildings or natural or man-made structures above or below ground;

(b) water, including the open sea, coastal or inland waters, ground waters, aquifers, drains and sewers;

(c) land, including the seabed or riverbed under any water as described above, and any surface land and sub-surface land; and

(d) human and animal health, and plant life;

"**Environmental Law**" means any statute or common law, or other requirement having the effect of law, in Ireland relating to the Environment, including without limitation the provisions of the Water Services Acts and Local Government (Water Pollution) Acts 1977 to 2007;

"**Environmental Protection Agency**" means the Environmental Protection Agency established pursuant to the Environmental Protection Agency Act, 1992;

"Force Majeure" means any event not within the reasonable control of a Party and which could not have been prevented or the consequences of which could not have been prevented by a Party acting and having acted as a Reasonable and Prudent Operator and which has the effect of preventing a Party from complying with its obligations under this Connection Agreement, including:

- acts of terrorists;

- war declared or undeclared, blockade, protest, revolution, riot, insurrection, civil commotion, invasion or armed conflict;

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- sabotage or acts of vandalism, criminal damage or the threat of such acts;

- extreme weather or environmental conditions including drought, extreme storms, lightning, fire, landslip, accumulation of snow or ice, natural disasters and phenomena including meteorites, the occurrence of pressure waves caused by aircraft or other aerial devices travelling at supersonic speeds, impact by aircraft, volcanic eruption, explosion including nuclear explosion, radioactive or chemical contamination or ionising radiation;

- any change of legislation, governmental order, restraint or directive having the effect of preventing or delaying the performance of any obligation hereunder;

- a strike or any other form of industrial actions by persons employed by the affected Party or by any local authority or by any contractor, subcontractor or agent of the affected Party;

- any strike which is part of a labour dispute of a national character occurring in Ireland or elsewhere;

- the act or omission of any contractor, subcontractor or supplier of either Party but only if due to an event which, but for the contractor, subcontractor or supplier not being a Party to the Connection Agreement, would have been Force Majeure;

- an outbreak of foot and mouth or any other restrictions put in place as part of a strategy to contain a communicable disease in Ireland; and

- the collapse of the euro currency;

provided that the following shall not constitute Force Majeure:

- lack of funds and/or the inability of a Party to pay; and

- mechanical or electrical breakdown or failure of machinery or plant owned or operated by either Party other than as a result of the circumstances identified above;

"Irish Water" means Irish Water (Uisce Éireann) a designated activity company incorporated in Ireland (company registration number 530363) and having its registered office at 24-26 Talbot Street, Dublin 1;

"**Legal Requirement**" means any Applicable Law, legislation or directive, regulation, requirement, instruction, direction or rule of any Competent Authority binding on either or all of the Parties to this Connection Agreement and includes any modification, extension or replacement thereof then in force;

"**Network**(s)" means the Waterworks and/or the Wastewater Works, as applicable and

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specified on the face of the Connection Offer, and any related lands, which are owned by, vested in, controlled or used by Irish Water;

"**PRA Compliant Map**" means ordinance survey plans, suitable for registration of any Deed of Grant of Wayleaves and Easements relating to property intended to be taken in charge by the local authority and the Connection Facilities to be vested in Irish Water together with all easements relating thereto suitably identified by the relevant symbols and/or colours designated by the Property Registration Authority.

"Public Road" means a road over which a public right of way exists and the responsibility for the maintenance of which lies on a road authority;

"**Reasonable and Prudent Operator**" means a person acting in good faith with the intention of performing its contractual obligations hereunder and in so doing and who in the general conduct of its undertaking exercises that degree of skill and diligence which would reasonably and ordinarily be exercised by a skilled and experienced operator complying with Applicable Law engaged in the same type of undertaking under the same or similar circumstances and conditions and the expression "**Standard of a Reasonable and Prudent Operator**" shall be construed accordingly;

"Regulator" means, where applicable, all present and future regulatory bodies having jurisdiction over Irish Water including, but not limited to, the Commission for Regulation of Utilities, the Environmental Protection Agency, the Minister of Housing, Planning and Local Government, the Office of the Data Protection Commissioner, the Competition and Consumer Protection Commission and/or any other statutory body or regulatory authority which regulates on an on-going basis or from time to time the business or operations of Irish Water;

"**Relevant Standards**" means the Connections and Developer Services Standard Details and Codes of Practice published and amended from time to time by Irish Water which are applicable to the Customer's Pipe Work and which are available on the Irish Water website (www.water.ie/Connections);

"Service Connection" means a water supply pipe or drainage pipe, together with any accessories and related fittings, extending from a Waterworks (where, as specified in the Connection Offer, the Customer requires connection to the Waterworks) or Wastewater Works (where, as specified in the Connection Offer, the Customer requires connection to the Wastewater Works) to the outer edge of the boundary to the curtilage of the Customer's Premises and used, or to be used as the case may be, for the purpose of connecting the Customer Premises with a Waterworks and/or Wastewater Works (as the case may be), and, if used or to be used for connecting more than one such premises it shall extend to the outer edge of the boundary to the curtilage of the premises which is furthermost from the said Waterworks and/or Wastewater Works (as the case may be);

"Sewage" and "**Sewage Effluent"** have the meanings assigned to them by the Local Government (Water Pollution) Acts 1977 to 2007;

"Sewers" means sewers of every description, excluding Storm Water Sewers, owned by,

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vested in or controlled by Irish Water, but does not include a Drain or Service Connection;

"Special Conditions" means any special conditions attached to the Connection Offer or as may be agreed from time to time;

"Storm Water" means run-off rainwater that enters any pipe;

"Storm Water Sewer" means any pipe or other conduit (a) used solely for the conveyance of Storm Water; or (b) designed or intended to be used for the conveyance of Storm Water (whether or not it is connected to a sewer by a 'storm water overflow' within the meaning of the Waste Water Discharge (Authorisation) Regulations 2007;

"Wastewater" means Sewage or other Sewage Effluent discharged, or to be discharged, to a Drain, Service Connection or Sewer but does not include Storm Water;

"**Wastewater Works**" means Sewers and their accessories, and all other associated physical elements used for collection, storage, measurement or treatment of Wastewater, and any related lands, which are owned by, vested in, controlled or used by Irish Water;

"Water Main" means water supply pipes owned by, vested in or controlled by Irish Water but does not include pipes, fittings and appliances to which the terms "Service Connection" or "Distribution System" apply;

"Water Services" means all services, including the provision of water intended for human consumption, which provide storage, measurement, treatment or distribution of surface water, ground water, and/or Wastewater collection, storage, measurement, treatment or disposal;

"Water Services Acts" means the Water Services Acts 2007 to 2017;

"Waterworks" means water sources, Water Mains and their accessories, and all other associated physical elements used for the abstraction, treatment, storage, measurement or distribution of water, and any related land, which are owned by, vested in, controlled or used by Irish Water;

"**Water Supply Maintenance Point**" means the point at which a Service Connection for water supply enters the boundary to the curtilage of the Customer's Premises.

2. **Interpretation**: Unless the context otherwise requires, any reference in this Connection Agreement to:

2.1 any gender includes the other;

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2.2 a statute, bye laws, regulation, delegated legislation or order is to the same as amended, modified or replaced from time to time and to any bye law, regulation, delegated legislation or order made thereunder;

2.3 any agreement, instrument or code is to the same as amended, novated, modified, supplemented or replaced from time to time;

2.4 unless otherwise specified any reference in this Connection Agreement to a "Clause" or "Appendix" is a reference to a Clause or Appendix in this Connection Agreement;

2.5 "**including**" means comprising but not by way of limitation to any event, class, list or category;

2.6 a "**Person**" shall be construed as a reference to any natural or legal person, firm, company, corporation, Government or Agency of a State or any association or partnership (whether or not having separate legal personality). A Person includes that person's legal or personal representative, permitted assigns and successors;

2.7 "**Party**" means a party to this Connection Agreement and "**Parties**" shall be construed accordingly;

2.8 the singular shall include the plural and vice versa;

2.9 words not otherwise defined that have well-known and generally acceptable technical or trade meanings in the water industry are used in this Connection Agreement in accordance with such recognised meanings;

2.10 where a word or expression is defined in this Connection Agreement, related words and expressions shall be construed accordingly;

2.11 headings are for ease of reference only and shall not affect its construction;

2.12 time shall be construed by reference to whatever time is applicable in Ireland; and

2.13 where a Party is required to use "**all reasonable endeavours**" that Party should explore all avenues reasonably open to it, and explore them all to the extent reasonable, but the Party is neither obliged to disregard its own commercial interests, nor required to continue trying to comply if it is clear that all further efforts would be futile; and

2.14 references to the "Commission for Regulation of Utilities" shall include any Competent Authority which may replace or succeed the Commission and assume its functions in relation to the regulation of the water industry in Ireland.

3. Defined Terms in Connection Offer: Terms which appear in uppercase in these General Conditions which are not otherwise defined shall have the meaning given to them in the Connection Offer.

4. Order of Precedence: In the event of inconsistency or conflict between the Connection Offer, the General Conditions and the Special Conditions, the following order of precedence will apply: (1) Special Conditions (2) General Conditions (3) Connection Offer.

5. Regulated Entity: Irish Water operates within a regulatory framework governed by the Regulators.

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6. **New Connection:** Irish Water shall charge and the Customer has agreed to pay in full the Connection Charge notified to the Customer in the Connection Offer. Following payment by the Customer, Irish Water shall perform or procure a third party to perform its obligations under the Connection Agreement and the Customer shall perform its obligations under the Connection Agreement.

7. **Sub-contractors/Agents:** The Customer acknowledges that Irish Water may sub-contract or engage an agent to perform certain of the obligations of Irish Water pursuant to the Connection Agreement, in which case, Irish Water shall not be relieved of any obligation or liability with respect to its rights or obligations under the Connection Agreement. The Customer shall have no recourse to any such third party; the Customer's sole recourse shall be to Irish Water in accordance with the Connection Agreement.

8. **Rights and obligations under law.** Nothing in this Connection Agreement shall affect or prejudice any rights, duties or obligations of the Parties under Applicable Laws.

9. **Principal Obligations:**

9.1 Subject to the terms of this Connection Agreement, Irish Water will carry out (or procure the carrying out) of Connection Works to facilitate the connection of the Customer's Premises to the Waterworks and/or Wastewater Works as specified in the Connection Offer).

9.2 The Customer will:

9.2.1 carry out its obligations pursuant to Clause 10 to facilitate the connection of the Customer's Premises to the Waterworks and/or Wastewater Works (as the case may be and as specified in the Connection Offer);

9.2.2 comply with all Relevant Standards and Applicable Laws and obtain all necessary easements, licences, permits or authorisations that may be required in connection with the performance of its obligations and its receipt of the Water Services pursuant to this Connection Agreement.

10. **Customer's Connection Obligations**:

10.1 The Customer shall:

10.1.1 make payment to Irish Water of the Connection Charge set out in the Connection Offer;

10.1.2 in a timely manner, provide, install, test and commission within the boundary to the curtilage of the Customer's Premises all Customer Pipework necessary to connect the Customer's Premises, Distribution System (if connection is to Waterworks) and Drain(s) (if connection is to Wastewater Works) to the Network(s) at the Connection Point(s) in accordance with Relevant Standards and Applicable Law;

10.1.3 provide safe, free and unrestricted access (which access may not be exclusive) for Irish Water and, and all parties acting on its behalf, to any

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land or premises of the Customer when reasonably required for the purposes of Irish Water's functions or in relation to this Connection Agreement;

10.1.4 if required by Irish Water in the Connection Offer and at the Customer's own cost, procure adequate way-leaves and easements from third party landowners for the Customer Pipe Work and the Connection Facilities (so that Irish Water and all parties acting on its behalf can establish and carry out the Connection Works) and if required by Irish Water:

10.1.4.1 deliver for approval by Irish Water the PRA Compliant Map;

10.1.4.2 where the Connection Facilities are not entirely comprised within the boundaries of the lands owned by the Customer, the Customer shall deliver to Irish Water a Deed of Grant of Wayleaves and Easements (in duplicate) for the benefit of Irish Water and the Connection Facilities, duly executed by the applicable landowner (to include without limitation a protected strip of ten metres, five metres on either side of the Connection Facilities, in respect of the full length of the Connection Facilities, unless an alternative strip width has been agreed in writing with Irish Water) TOGETHER WITH the PRA Compliant Map. The required form of Deed of Grant of Wayleaves and Easements will be provided by Irish Water on request;

10.1.4.3 irrevocably instruct its appointed solicitor to use best endeavours to stamp and register the Deed(s) of Wayleaves and Easements in the Property Registration Authority as soon as practicable at the Customer's expense and to provide notice of the relevant dealing number and evidence of such registration to Irish Water immediately following completion of registration **PROVIDED THAT** if requested by Irish Water the Customer shall consent to Irish Water taking over the registration process, and the Customer undertakes and agrees to assist Irish Water with this registration process following written request to do so;

10.1.4.4 specifically include reference and notice of the Deed(s) of Wayleaves and Easements in favour of Irish Water in any transfers, conveyances, assignment, lease and/or licence which it may have with any third party.

10.1.5 inform Irish Water, and all parties acting on its behalf, of any relevant safety precautions before entry to the Customer's Premises. Since Irish Water will not be aware of the specific hazards present on the Customer's Premises, the Customer is obliged to inform Irish Water of such hazards. The Customer must ensure that Irish Water, and all parties acting on its behalf, are either accompanied at all times by the Customer, or has been adequately briefed as to the presence of any specific hazards, the precautions that must be taken and what to do in the event of an accident or emergency;

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10.1.6 co-operate with and assist Irish Water, and all parties acting on its behalf;

10.1.7 not unreasonably interfere with or restrict the carrying out of Irish Water's obligations in accordance with this Connection Agreement;

10.1.8 not do or cause or permit to be done anything which causes, or could reasonably be expected to cause, damage or destruction to any part of the Connection Works or in any way interferes with its operation or materially interferes with Irish Water's (and all parties' acting on its behalf) access to same;

10.1.9 be solely responsible at all times for maintaining and keeping excavations and reinstatements on its property in a safe and secure condition and will indemnify and keep indemnified Irish Water, its servants, agents and contractors against all claims, demands, proceedings, damages and expenses whatsoever in respect thereof;

10.1.10 where there is to be a connection to the Waterworks, accept liability for the care, maintenance, renewal and repair of the Customer Pipework and the plumbing fixtures and fittings and associated pipework of the Distribution System up to the Connection Point where the Service Connection connects with the Distribution System, to ensure that such infrastructure complies at all times with Applicable Law including but not limited to European Union (Drinking Water) Regulations 2014 and any regulations that may be made under Section 54 of the Water Services Act 2007 or any bye-laws made by Irish Water. Irish Water shall accept no responsibility for the maintenance, renewal, adequacy, safety or other characteristics of such infrastructure, save that, in terms of water supply, Irish Water shall maintain and repair that part of the Service Connection extending from the Waterworks up to the Water Supply Maintenance Point;

10.1.11 where there is to be a connection to the Wastewater Works, accept liability for the care, maintenance, renewal and repair of the Customer Pipe Work and the plumbing fixtures and fittings and associated pipework of any Drains up to the Connection Point with the Service Connection to which those Drains are connected. Irish Water shall accept no responsibility for the maintenance, renewal, adequacy, safety or other characteristics of such infrastructure. Any Drain or Drains located within the boundary to the curtilage of the Customer's Premises and/or any system of Drains that drains more than one premises within the boundary to the curtilage of those Customer's Premises shall be the sole responsibility of the Customer; and

10.1.12 agree the timing of any works to be carried out by the Customer with Irish Water.

10.2 The Customer shall take such steps as Irish Water may notify from time to time to prevent a risk to human health or the environment, to facilitate the reasonable conservation of water, to ensure the proper and effective management of Water Services, to prevent contamination of any Waterworks (where there is to be a connection to the Waterworks), and to protect the Wastewater Works (where there

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is to be a connection to the Wastewater Works).

10.3 The Customer shall not allow discharge of rainwater runoff from roofs, paved areas or other surfaces into any Drain or Sewer, except as may be agreed in advance in writing with Irish Water.

10.4 During the duration of this Connection Agreement, Irish Water may specify any technical requirements or standards necessary to minimise the risk of leakage or to protect the integrity of any Waterworks or Wastewater Works.

10.5 For the avoidance of doubt, the Customer is prohibited from using the Service Connection and/or using any other mechanism to supply Water Services onwards to another location or premises other than the Customer's Premises notified to Irish Water by the Customer to which the Service Connection applies. Irish Water shall in no way be liable for a breach of this provision by the Customer or by any other third party, including any adverse consequences arising directly or indirectly as a result of such a breach and all costs, damages or claims arising therefrom.

10.6 The Customer hereby indemnifies Irish Water and its servants, agents and contractors in respect of any loss, damage or injury that may result from the laying or use of pipes within the boundary to the curtilage of the Customer's Premises. The Customer indemnifies Irish Water and its servants, agents and contractors in respect of any loss, damage or injury caused as a result of any leakage of Wastewater from Drains or Service Connections or water from the Distribution System up to the Connection Point where Service Connection connects with the Distribution System.

10.7 The Customer shall be solely responsible for preventing any backflow, back syphonage or blowback from the Distribution System of the Customer's Premises into the Water Main or Waterworks.

10.8 Where a connection is made to the Wastewater Works, Irish Water shall be entitled to take spot samples of the Wastewater discharged by the Customer for the purposes of testing compliance with the terms of this Connection Agreement and/or for general research or compliance purposes. If, in the opinion of Irish Water, the characteristics of the Customer's Wastewater are such that it is likely to produce what Irish Water determines to be a significant impact upon the Wastewater Works, then Irish Water may require the Customer to enter into a separate end-user agreement containing additional conditions in connection with the treatment of the Customer's Wastewater. The Customer acknowledges and agrees that it will, if requested to do so by Irish Water, cease discharging its Wastewater to the Network pending entry into the end-user agreement

11. Use of Water:

11.1 Where in the opinion of Irish Water, waste or deliberate misuse of water occurs on the Customer's Premises, Irish Water may restrict or reduce the pressure of the Water Services temporarily until satisfied that the waste or misuse has been rectified.

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11.2 The Customer may in times of water scarcity be required to limit the use of Water for essential purposes only as prescribed by Irish Water.

11.3 With the exception of customers covered under the Irish Water Domestic Customer Vulnerable Code of Practice, the Customer shall be responsible for installing and maintaining sufficient storage to provide a reserve water supply if that is necessary for any special needs which the Customer has for a specific rate of flow or pressure or if, taking account of any interruption to the Water Services which might occur due to works, a burst or any other reason, a prudent customer acting reasonably in order to protect its business needs would provide such storage.

11.4 The Customer shall ensure so far as practicable that all water is drawn at a reasonably regular rate of flow and pressure and shall use its storage facility to reduce peak demands being made upon the Waterworks by the Customer.

11.5 The provisions of this Clause 11 shall survive the termination or expiry of this Connection Agreement.

12. Time for Completion/Delays: Irish Water shall use commercially reasonable endeavours to ensure that the Connection Works are completed in a timely manner but Irish Water shall not be liable for any loss or damage suffered by the Customer in respect of delays resulting from any cause whatsoever.

13. Third Party Losses: The Customer shall indemnify Irish Water and its servants, agents and contractors, and hold Irish Water and its servants, agents and contractors harmless at all times from any and all losses of any third party incurred, suffered or sustained pursuant to this Connection Agreement, but only to the extent any such loss was not caused by Irish Water's breach of this Connection Agreement or the negligence of Irish Water in undertaking its obligations under this Connection Agreement.

14. Liability:

14.1 **Immunity:** Nothing in this Connection Agreement shall affect any immunity that Irish Water benefits from Applicable Law.

14.2 **Death or Personal Injury:** Subject to Clause 14.1 above, nothing in this Connection Agreement will exclude or limit the liability of either Party for death or personal injury resulting from the negligence of that Party or any other loss that cannot be excluded or limited under Applicable Law.

14.3 **Reasonable and Prudent Operator**: Subject to Clause 14.2, where the obligations of Irish Water are performed in accordance with the Standard of a Reasonable and Prudent Operator, Irish Water shall have no liability whatsoever to the Customer in respect of this Connection Agreement.

14.4 **No liability for Force Majeure:** Neither Party shall be liable for any breach of this Connection Agreement directly or indirectly caused by Force Majeure.

14.5 **No Liability:** Neither Party shall be liable to the other Party in contract, tort, warranty, strict liability or any other legal theory for: (a) any loss of profit, revenue,

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use, contract (other than this Connection Agreement), opportunity, or goodwill; or (b) punitive or exemplary damages; or (c) any indirect, consequential, incidental or special damages (including punitive damages).

14.6 **No implied warranties:** All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from this Connection Agreement.

15. Assignment: The Customer shall not be entitled to assign the benefit or transfer the burden of this Connection Agreement without the prior written consent of Irish Water. Nothing shall prevent Irish Water from assigning the benefit or transferring the burden of this Connection Agreement to an Affiliate.

16. Sub-contractors: Either Party shall have the right to sub-contract or delegate the performance of any of its obligations or duties arising under this Connection Agreement without the prior consent of the other Party. Such subcontracting by Irish Water or the Customer of the performance of any obligations or duties under this Connection Agreement shall not relieve Irish Water or the Customer (as the case may be) from liability for performance of such obligation or duty.

17. Customer's Authority: The Customer represents and warrants to Irish Water that it has full power and authority to enter into and to exercise its rights and perform its obligations under this Connection Agreement and has obtained all authorisations and consents necessary for it to so enter, exercise rights and perform obligations and such authorisations and consents are in full force and effect.

18. Term & Termination:

18.1 This Connection Agreement shall commence upon the date that the Customer returns the Customer Acceptance Form and pays the Connection Charge (and if these occur on different days, the Connection Agreement shall commence on the later date) and shall continue in full force and effect until the Parties' respective obligations under Clause 9 have been performed in full unless it is earlier terminated in accordance with the provisions of this Connection Agreement.

18.2 The Connection Offer and this Connection Agreement is based on a high-level desk top analysis carried out by Irish Water on the feasibility of a carrying out the Connection Works for the Customer Premises. Once the Connection Offer has been accepted by You, Irish Water will begin a detailed design of the Connection Works. If during the process of detailed design Irish Water, at its discretion, forms the opinion (acting reasonably) that either:

A. the Connection Works are not feasible or practicable or safe to complete; or
B. the acquisition of all rights for the laying of the Customer Pipe Work and/or the Connection Works are not possible or commercially practicable; or
C. the Connection Works would involve the expenditure by Irish Water of monies in excess of that provided for by way of the Connection Charge,

then the Connection Agreement may be terminated by Irish Water by way of written notice to the Customer. In the event that Irish Water exercises its right to terminate the Connection Agreement on the basis of the foregoing then Irish Water shall return

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any Connection Charge paid by the Customer, less (if deemed appropriate by Irish Water) any outstanding costs and expenses incurred by Irish Water as at the date of termination. This provision is additional to and does not replace any other provisions relating to termination.

18.3 Irish Water shall be entitled to terminate this Connection Agreement by written notice to the Customer if the Customer sells the Customer Premises to a third party.

18.4 The Customer shall be entitled to terminate this Connection Agreement upon written notice to Irish Water within 14 days of the date of this Connection Agreement.

18.5 Either Party shall be entitled to terminate this Connection Agreement upon written notice to the other Party where:

18.5.1 there is in any material breach by the other Party of its obligations under this Connection Agreement and the breach cannot be remedied or if it is capable of being remedied, it has not been remedied by such Party within 28 days of the issue of a notice to it by the other Party identifying the breach and requiring it to be remedied; and

18.5.2 an event of Force Majeure persists for a period of 180 days or more, provided at least 14 days' notice of termination has been given in writing.

18.6 In the event that either Party exercises its right to terminate under this Clause before the Connection Works commence, Irish Water shall return any Connection Charge paid by the Customer, less any outstanding costs and expenses incurred by Irish Water as at the date of termination, including, but not limited to, costs of construction, and any legal or financing costs.

18.7 Termination of this Connection Agreement shall not prejudice or affect any right of action or remedy which shall have accrued or shall thereafter accrue to either Party under this Connection Agreement.

18.8 Without prejudice to Clause 18.7, in particular, the following clauses:

Clause 4 (Order of Precedence);
Clauses 10.1.1, 10.1.9, 10.1.10, 10.1.11, 10.2, 10.3, 10.5, 10.6, 10.7 and 10.8;
Clause 11 (Use of Water);
Clause 13 (Third Party Losses);
Clause 14 (Liability);
Clause 18 (Term and Termination);
Clause 20 (Insurance)*;*
Clause 26 (Entire Agreement);
Clause 21 (Data Protection);
Clause 29 (Governing Law); and
Clause 30 (Disputes),

of this Connection Agreement shall continue in full force and effect and be fully binding on the Parties notwithstanding termination or expiry.

19. Notices:

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19.1 Notices or other communications given pursuant to this Connection Agreement shall be in writing and shall be sufficiently given if delivered by hand or sent by e-mail or pre-paid registered post to the e-mail or postal address referred to below of the Party to which the notice or communication is being given or to such other address and as such Party shall communicate from time to time to the Party giving the notice or communication.

19.2 The Customer's address for service is as set out in the Connection Offer.

19.3 Any notice required or permitted to be given by the Customer shall be in writing addressed to Irish Water at Irish Water, PO Box 860, South City Delivery Office, Cork City or by email to newconnections@water.ie or such other address or electronic mail address as may be notified by the Customer to Irish Water from time to time.

19.4 Every notice given in accordance shall be deemed to have been received as follows:

Means of Dispatch	Deemed Received
Hand Delivery	The time of delivery.
Post	48 hours after posting (and proof that the envelope containing the notice or communication was properly addressed and sent by pre-paid registered post will be sufficient evidence that the notice or other communication has been duly served or given).
Email	Upon receipt by the addressee of the complete text in legible form.

provided that if, in accordance with the above provisions, any such notice or other communication would otherwise be deemed to be given or made outside working hours (being 9am to 5.30pm on a Business Day) such notice or other communication shall be deemed to be given or made at the start of working hours on the next Business Day.

20. Insurance:

20.1 The following insurance obligations will apply in the alternative depending on whether the Customer's Premises is a:

20.1.1 *single domestic unit* (see Clause 20.2 below); or
20.1.2 *a small non-domestic development* (where the connection to the Customer's Premises is proposed to be a 25mm water supply Service Connection and/or a 100mm Wastewater Service Connection)(see Clause 20.2 below); or
20.1.3 a development *other than* a single domestic unit or a small non-domestic unit (see Clause 20.3 below).

20.2 Where this Connection Agreement relates to a *single domestic unit* or *a small non-domestic development*, the Customer shall ensure that any Contractor engaged by

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them in relation to the Customer's Pipe Work has appropriate and adequate insurance cover in place throughout the duration of the works in relation to the matters referred to in Clause 10.

20.3 Where this Connection Agreement relates to developments *other than* a single domestic unit or a small non-domestic development, the Customer shall ensure that any Contractor engaged by them in relation to the Customer's Pipe Work has appropriate and adequate insurance cover in place throughout the duration of the works in relation to the matters referred to in Clauses 10. In particular, the Customer shall, within five days following a written request from Irish Water, furnish Irish Water with evidence that the insurances referred to below are being maintained by the Contractor:

20.3.1 **Employers Liability** insurance cover with a minimum indemnity limit of €13 million any one accident/occurrence unlimited in the period of insurance;
20.3.2 **Public/Products/Pollution Liability** insurance cover with a minimum indemnity limit of €6.5 million any one accident/occurrence unlimited in the period of insurance under the Public Liability and in the aggregate in respect of Products & Pollution Liability;
20.3.3 **Contractors "All Risks"** insurance for the full reinstatement value of the proposed works in respect of any one claim; and
20.3.4 **Motor** insurance cover with a minimum third party property damage limit of €6.5m for all vehicles owned, leased, rented or run (to include tool of trade use) by the Contractor in connection with the services to be provided by it.

The Insurance policies detailed in this Clause 20.3 with the exception of Motor must include a specific indemnity to Irish Water.

21. Data Protection:

21.1 It is necessary for Irish Water to collect and use personal data relating to the Customer in respect of this Connection Agreement, such as your name, address, contact details and financial information (depending on payment method). This data will be used to enable Irish Water to carry out its obligations under this Connection Agreement and manage its relationship with the Customer, such as arranging payments, visits to the Customer's Premises and scheduling construction activities. Irish Water may keep the Customer's data for a reasonable period after the Customer ceases to be supplied with Water Services but will not keep it for any longer than is necessary and/or as required by law.

21.2 Irish Water may share the Customer's data with other members of the Ervia group and agents who act on behalf of Irish Water in connection with the activities referred to above. Such agents are only permitted to use the Customer's data as instructed by Irish Water. They are also required to keep the Customer's data safe and secure.

21.3 From time to time the Customer may speak to employees of Irish Water (or agents acting on its behalf) by telephone. To ensure that Irish Water can provide a quality service, telephone conversations with the Customer may be recorded. Irish Water will treat the recorded information as confidential and will only use it for staff training/quality control purposes, confirming details of the Customer's conversations with Irish Water or any other purposes mentioned in this notice.

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21.4 The Customer has various rights under data privacy laws, which include the right to request a copy of his/her personal data. If the Customer wishes to avail of this right or for further information please contact Irish Water in writing at FREEPOST, Irish Water, Data Protection Officer, PO Box 6000, Talbot Street, Dublin 1 or via email to dataprotection@ervia.ie.

21.5 Irish Water endeavours to use appropriate technical and physical security measures to protect your personal data which is transmitted, stored or otherwise processed by Irish Water, from accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access. Irish Water's service providers are also selected carefully and required to use appropriate protective measures.

21.6 As effective as modern security practices are, no physical or electronic security system is entirely secure. The transmission of information via the internet is not completely secure. Although Irish Water will do its best to protect your data, Irish Water cannot guarantee the security of your data transmitted to Irish Water's Site. Any transmission of data is at your own risk. Once Irish Water receives your data, Irish Water will use appropriate security measures to seek to prevent unauthorised access. Irish Water will continue to revise policies and implement additional security features as new technologies become available.

21.7 In the event that there is an interception or unauthorised access to your personal data, Irish Water will not be liable or responsible for any resulting misuse of your personal information.

21.8 For further information on how Irish Water treats the Personal Data of Customers when providing Water Services, please see our Privacy Notice on www.water.ie. Alternatively, please contact us at the details above for Irish Water's Privacy Notice.

21.9 In order to evaluate and improve our Customer's experience, we or agents on our behalf, may from time to time issue surveys to the Customer in relation to the services provided. If you do not wish to receive a survey, please let us know.

21.10 Irish Water reserves the right to change and/or update its Privacy Notice at any time in Irish Water's sole discretion. If Irish Water makes changes, Irish Water will publish same on www.water.ie.

22. Safety, Health and Welfare at Work (Construction) Regulations 2013: It is acknowledged and agreed that the works carried out for, or on behalf of, the Customer in relation to the Customer's Pipe Work are entirely separate and distinct to the Connection Works carried out for and on behalf of Irish Water. The Customer shall ensure full compliance with all applicable health and safety legislation including, if necessary and applicable, the Safety, Health and Welfare at Work (Construction) Regulations 2013 in respect of the works to the Customers Pipe Work. The Customer acknowledges that, as client, it may have certain obligations under the Safety, Health and Welfare at Work (Construction) Regulations 2013 in relation to the works to the Customer's Pipe Work and, as such, will ensure full compliance with those obligations. Irish Water shall ensure full compliance with all applicable health and safety legislation including, if necessary and applicable, the Safety, Health and Welfare at Work (Construction) Regulations 2013 in respect of the Connection Works. Irish Water acknowledges that, as client, it may have

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certain obligations under the Safety, Health and Welfare at Work (Construction) Regulations 2013 in relation to the Connection Work and, as such, will ensure full compliance with those obligations.

23. No Waiver: No forbearance, indulgence or relaxation on the part of a Party shown or granted to the other Party shall in any way affect, diminish, restrict or prejudice the rights or powers of Irish Water or operate as or be deemed to be a waiver of any breach of conditions. None of the provisions of this Connection Agreement shall be considered waived by a Party unless such waiver is given in writing and signed by a duly authorised representative of the Party making the waiver. No such waiver shall be a waiver of any past or future default or breach nor shall such waiver constitute a modification of any term provision condition or covenant of the contract unless expressly so provided in such waiver.

24. Severability: All of the provisions contained in this Connection Agreement are distinct and severable, and if any provision is held or declared to be unenforceable, illegal or void in the whole or in part by any court, regulatory authority or other Competent Authority it will, to that extent only, be deemed not to form part of this Connection Agreement and the enforceability, legality and validity of the remainder of these terms and conditions will not in any event be affected.

25. Force Majeure: If either Party is by reason of Force Majeure rendered unable wholly or in part to carry out its obligations under this Connection Agreement, then upon notice in writing of such Force Majeure from the Party affected to the other Party, as soon as possible after the occurrence of the cause relied on, the Party affected shall be released from its obligations (other than the obligations to pay money) and suspended from the exercise of its rights under the Connection Agreement to the extent to which they are affected by the circumstances of Force Majeure and for the period during which those circumstances exist PROVIDED THAT the Party affected shall use all reasonable endeavours to prevent, avoid, overcome or mitigate the effects of such occurrence.

26. Entire Agreement:

26.1 This Connection Agreement shall be the entire agreement between the Parties with respect to the subject matter and expressly excludes any warranty, condition or other undertaking implied at law or by custom and supersedes all previous agreements and understandings between the Parties (other than as provided for in this Connection Agreement) with respect to its subject matter.

26.2 The Customer acknowledges and confirms that it does not enter into this Connection Agreement in reliance on any representation, any misrepresentation, warranty or other undertaking by Irish Water not fully reflected in this Connection Agreement.

26.3 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from this Connection Agreement.

27. Amendments: This Connection Agreement may be updated at any time by Irish Water with replacement terms and conditions published on www.water.ie.

28. No Derogation from Statutory Responsibilities:

The Customer acknowledges and accepts:

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28.1 their obligations and duties under the Water Services Acts in relation to the protection of human health, repair of leaks and the reasonable conservation of water and the management, consumption and use of water on or at the Customer's Premises to ensure that water is not wasted or consumed in excessive amounts;

28.2 that notwithstanding this Connection Agreement, Irish Water is not limited from exercising its powers under the Water Services Acts in relation to the Customer;

28.3 without prejudice to Clauses 10.1.10 and 10.1.11 of these General Conditions and notwithstanding the carrying out of Connection Works, the Customer Pipe Work (in terms of ownership, maintenance, repair, renewal or otherwise) will remain the sole responsibility of the Customer unless ownership is transferred to Irish Water.

29. Governing Law: The Connection Agreement shall be governed and construed in accordance with the laws of Ireland and, subject to Clause 30, the courts of Ireland shall have exclusive jurisdiction to decide disputes arising between the Customer and Irish Water.

30. Dispute Resolution:

30.1 **Notification of a Dispute:** Any Dispute between the Parties shall be resolved, if possible, by negotiation. In the event that no agreement is reached within fifteen (15) days of the date on which either Party first notified the other Party that a Dispute exists, either Party shall have the right to have the Dispute determined in accordance with Clause 30.2.

30.2 **Mediation:** The mediator is to be appointed by agreement between the Parties and, in the absence of agreement within five (5) working days of the receipt by one Party of a written notice to concur in the appointment of a mediator, by the Centre for Effective Dispute Resolution ("**CEDR**"). The mediation will be in Dublin and the costs of the mediation shall be shared equally between the Parties. In the event that the matter is not resolved within three (3) months of being referred to the mediator under this Clause 30.2, then either Party may (but for the avoidance of doubt not be obliged to do so) commence court proceedings for the determination of the Dispute in question.

30.3 **Performance to Continue During Dispute:** Insofar as practicable, the Parties shall continue to implement the terms of this Connection Agreement notwithstanding the initiation of mediation or Court proceedings and any pending Dispute. No payment due to or payable by Irish Water or the Customer shall be withheld on account of a pending reference to the dispute resolution mechanism except to the extent that such payment is the subject of such dispute. However, Irish Water shall not be obliged to carry out the Connection Works unless it is in receipt of the Connection Costs.

30.4 **Survival:** The provisions of Clause 30.2 and 30.3 shall continue after the termination of this Connection Agreement where notice of the existence of the Dispute was given under Clause 30.1 prior to termination. Nothing in this Connection Agreement is intended to prejudice the referral of a dispute to the

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Commission for Regulation of Utilities for determination in accordance with Irish Water's Customer Handbook.

31. New Industry Structure

31.1 If, after execution of this Connection Agreement, there shall be enacted and brought into force any Legal Requirement for:

31.1.1 the further reorganisation of the water industry in Ireland or any material part of it;

31.1.2 the further facilitation of the introduction of third party interests into the affairs of the water industry in Ireland or any part of it; or

31.1.3 the amendment or variation of any policy of Irish Water or the manner in which the Network(s) and any agreements or protocols related thereto are organised;

which necessitates a variation to this Connection Agreement, the Parties shall effect such changes as are reasonably necessary so as to ensure that the operations contemplated by this Connection Agreement shall be conducted in a manner which is consistent with the effect of the new Legal Requirement and most closely reflects the intentions of the same with effect from the date thereof provided that any such amendment will be of no greater extent than is required by reason of the same.

31.2 If any variation proposed under Clause 31.1 has not been agreed by the Parties within three (3) months of it being proposed (the Parties acting as soon as reasonably practicable), either Party may refer to the Commission for Regulation of Utilities for determination and the Parties agree to abide by and to give effect to the Commission's determination, if necessary by entering into an agreement supplemental to this Connection Agreement.

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APPENDIX 3

Special Conditions

Notes

SECTION 3.0 – Special Conditions pertaining to the Water/Wastewater Service Connection(s)

SECTION 3.1 - Water Service Connection(s)

1	Distance from Customer's Premises to Connection Point in metres (Service Connection).	22.00	m
2	Diameter of Service Connection required (external diameter in mm).	150.00	mm
3	Diameter of meter required (external diameter in mm).	150.00	mm
4	Distance from Service Connection Point to the existing mains in metres (Mains Extension).		m
5	Irish Water will deliver the full physical connection works on the public side from its Network(s) to your property boundary		
6			
7	The design & construction of the new proposed water connection to be in accordance with the IW Codes of Practice and Standard Details. These are available from the IW website		
8	Once the offer has been accepted with payment and signed counterpart returned, Irish Water will commence the design of the Connection Works and obtain all relevant statutory approvals including obtaining a Road Opening Licence (ROL) to allow the Works commence. It may take some time to obtain the ROL. Once these approvals are in place and design stage is complete we will contact you 14 days in advance of the proposed connection works taking place.		

SECTION 3.2 - Wastewater Service Connection(s)

1	Distance from Customer's Premises to Connection Point in metres (Service Connection).	0.00	m
2	Diameter of Service Connection required (internal diameter in mm).	225.00	mm
3	Distance from Service Connection Point to the existing mains in metres (Mains Extension).		m
4	Discharge Licence must be obtained prior to any physical connection to IW infrastructure being made.		
5	The Customer is responsible for delivering the full connection works including obtaining a Road Opening Licence from the relevant Authority. Irish Water/Local Authority Water Services Department (Agents to IW) will supervise the physical connection to the Irish Water network.		
6	The customer should contact the Meath County Council water services department (Agents to Irish Water) to organise the physical connection on .		
7	The design & construction of the new proposed wastewater connection to be in accordance with the IW Codes of Practice and Standard Details. These are available from the IW website		
8	No storm runoff shall drain to the public foul sewer		
9			
10			

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APPENDIX 4

Connection Charge

Connection Charge		
Water Connection Charge		
	Standard Charge	€113,545.00
	Standard Charge – Additional Service Length	€0.00
	Quotable Charge	€9,827.81
	Sub total	**€123,372.81**
Wastewater Connection Charge		
	Standard Charge	€23,344.00
	Standard Charge – Additional Service Length	€0.00
	Quotable Charge	
	Sub total	**€23,344.00**
Total Connection Charge		**€146,716.81**

APPENDIX 14.3

IDA IRELAND CONSENT LETTER

15.0 WASTE MANAGEMENT

15.1 INTRODUCTION

This chapter has been prepared to address the issues associated with waste management during the construction and operational phases of the Proposed Development as described in Chapter 2.

A site-specific Construction & Demolition Waste Management Plan (C&D WMP) has been prepared to deal with waste generation during the construction phase of the Proposed Development and is included as Appendix 15.1. The C&D WMP has been prepared in accordance with the '*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects'* document produced by the National Construction and Demolition Waste Council (NCDWC) in conjunction with the Department of the Environment, Heritage and Local Government in July 2006. This document will be implemented by the contractor for all site works.

15.2 METHODOLOGY

The assessment of the impacts of the Proposed Development arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents (as set out in Section 15.2.1), along with an extensive document review to assist in identifying current and future requirements for waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports. A summary of the documents reviewed, and the relevant legislation is provided in Appendix 15.1 C&D WMP.

This Chapter is based on the Proposed Development, as described in Chapter 2 (Description of the Proposed Development) and considers the following aspects:

- Legislative context;
- Construction phase (including site preparation, excavation and levelling); and
- Operational phase.

A desk study was carried out which includes the following tasks:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland;
- Description of the typical waste materials that will be generated during the construction and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of surplus made ground and soils and stones generated during the construction phase of the Proposed Development have been calculated by the project engineers Clifton Scannell Emerson Associates (CSEA) and are outlined in section 15.4.1 below.

There will be a very small amount of waste generated during the operational phase. This will be minimal based on the fact that there will be no full-time staff using the site and only interim use by maintenance staff.

Mitigation measures are proposed to minimise the effect of the Proposed Development on the environment during the construction and operational phases, to promote

efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 15.6.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 6 Land, Soils, Geology and Hydrogeology. Chapter 6 of the EIA Report also discusses the environmental quality of soils which will have to be excavated to facilitate construction of the Proposed Development.

15.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended).

In addition, the Irish government issues regular policy documents which outline measures aimed to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document *A Resource Opportunity – Waste Management Policy in Ireland* was published in 2012 and stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention.

In September 2020, the Department of Communications, Climate Action and Environment published the new *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025*. It aims to fulfil the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. It is intended that this new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years. It will be followed later this year by an All of Government Circular Economy Strategy. The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection & Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The strategy for the management of waste from the construction phase is carried out in line with the requirements of the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* published by the Department of Environment, Heritage and Local Government (DoEHLG) in 2006. The guidance document published by FÁS and the Construction Industry Federation (CIF) *Construction and Demolition Waste Management: A handbook for Contractors and Site Managers* [5] were also consulted in the preparation of this assessment.

15.3 RECEIVING ENVIRONMENT

In terms of waste management, the receiving environment is largely defined by Meath County Council (MCC) as the local authority responsible for setting and administering waste management activities in the area. The waste management activities are governed by the requirements set out in the Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021. The EMR Waste Management Plan 2015 – 2021 sets the following targets for waste management in the region:

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices; and
- A specific target for C&D waste of "70% preparing for reuse, recycling and other recovery of construction and demolition waste" (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The National Waste Statistics update published by the EPA in October 2018 identifies that Ireland's current progress against this C&D waste target is at 68% and our progress against 'Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)' is at 45%. Both of these targets are required to be met by 12 December 2020 in accordance with the requirements of the Waste Framework Directive.

The *Meath County Development Plan 2013 – 2019* sets out a number of policies and objectives for Meath in line with the objectives of the regional waste management plan. Waste policies and objectives with a particular relevance to the Proposed Development are:

Policies:

- *WM POL 7: To encourage the recycling of construction and demolition waste and the reuse of aggregate and other materials in future construction projects.*

Objectives:

- *WM OBJ 7: To promote the implementation of Waste Management Activities in accordance with 'Best Practice' and national policy.*
- *WM OBJ 8: To facilitate the implementation of national legislation and national and regional waste management policy.*
- *WM OBJ 13: To support the development of facilities to cater for commercial waste not provided for in the kerbside collection system such as WEEE, C&D type waste and hazardous materials in accordance with the requirements of the North East Waste Management Plan.* (Note: this has been replaced by the Eastern-Midlands Region Waste Management Plan 2015 – 2021)
- *WM OBJ 17: To require developers to prepare construction and demolition waste management plans for new construction projects over certain thresholds which shall meet the relevant recycling/recovery targets for such waste in accordance with the national legislation and national and regional waste management policy*
- *WM OBJ 18: To seek to ensure in cooperation with relevant authorities that waste management facilities are appropriately managed and monitored according to best practice to maximise efficiencies and to protect human health and the natural environment.*

In terms of physical waste infrastructure, three municipal solid waste landfills remain operational in the Eastern Midlands Region (EMR) and are all operated by the private sector. There are a number of other licensed and permitted facilities in operation in the EMR including waste transfer stations, hazardous waste facilities and integrated waste management facilities. There are two existing thermal treatment facilities, one in Duleek, Co. Meath and a second facility in Poolbeg in Dublin.

15.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The Proposed Development is described in detail in Chapter 2 (Description of the Proposed Development) of this EIA Report. The aspects relevant to this chapter are described in the following sections.

15.4.1 Construction Phase

The construction of foundations for the 110kV GIS substation, the installation of ducting for the 110kV underground transmission lines, the installation of the 49kVA electricity connection and associated ancillary development (as described in detail in Chapter 2) will require the excavation of topsoil and subsoil.

The optimum depth of excavation required to facilitate installation of the 110kV ducting for the transmission line is 1.2m below ground level (bgl) but may increase to up to c. 1.5m at utility crossings. The optimum width of each trench is 1.0m, however this may vary depending on ground conditions and existing services.

The optimum depth of excavation required to facilitate installation of the ducting for the 49kVA cable installation is c. 0.95-1m below ground level (bgl) but may increase to up to c. 1.5m at utility crossings. The optimum width of each trench is c.0.6m, however this may vary depending on ground conditions and existing services to up to c. 1m.

Suitable topsoil and subsoil will be reused on site as backfill, where possible. However, it is currently envisaged that c. 17,000m^3 will require removal offsite (as advised by the project engineers, CSEA).

The importation of fill materials will be required for construction of foundations and to reinstate the trenches. The project engineers, CSEA, have estimated that the importation of up to 4800m^3 of fill material will be required.

The surplus excavated material will be removed off-site either as a waste or, where appropriate, as a by-product. Where the material is to be reused on another site as a by-product (and not as a waste), this will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. A formal documented EPA approval will be obtained before re-using the material as a by-product.

If the material is deemed to be a waste, removal and reuse/recycling/recovery/disposal of the material will be carried out in accordance with the *Waste Management Act 1996* (as amended), the *Waste Management (Collection Permit) Regulations 2007* (as amended) and the *Waste Management (Facility Permit & Registration) Regulations 2007* (as amended). The volume of waste requiring recovery/disposal will dictate whether a Certificate of Registration (COR), permit or licence is required by the receiving facility.

As stated in Chapter 6 (Land, Soils, Geology and Hydrogeology), there is no evidence of any historical waste disposal or source of contamination on the site. A site investigation was carried out at the site by IGSL in 2020 which included trial pitting and boreholes. Soil samples were collected from the trial pits and boreholes for soil analysis for the following parameters:

- Metals, PAH, TPH, BTEX, PCB; general psycho-chemicals parameters;
- CEN 10:1: Metals, general psycho-chemicals parameters; and

- Waste Acceptance Criteria (WAC) analysis.

The soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and also ecology for a commercial/industrial end use (LQM/CIEH S4Uls GACs). Comparison of the soil results with these GACs do not show any exceedances which would indicate contamination or risk to ecology or human health.

The soil analysis results were also compared to the landfill acceptance criteria as specified in the European Communities (EC) *Council Decision 2003/33/EC* which identifies the maximum concentration of selected key contaminants permitted for acceptance at authorised waste facilities. The WAC criterion sets threshold concentrations for contaminants to classify the material under three categories; inert, non-hazardous and hazardous. None of the soils analysed showed any exceedances of inert WAC thresholds.

The authorised waste facilities may also require the soil to be classified as Hazardous or Non-Hazardous in accordance with the EPA publication *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* using the HazWasteOnline classification tool (or similar approved methodology). This can be done based on the soil analysis data obtained from the IGSL site investigation.

It is expected that wastes generated (other than excavated material) from other construction activities will be negligible and will generally comprise waste generated from construction workers. These wastes would generally be organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided at the site compound during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. The welfare facilities and site office for the Proposed Development will be located in a site compound on an existing data storage facility site to the south of the Proposed Development where construction works are currently ongoing.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific C&D WMP included as Appendix 15.1.

It should be noted that until final materials and detailed construction methodologies have been confirmed it is difficult to predict with a high level of accuracy the construction waste that will be generated from the construction of the Proposed Development as the exact materials and quantities may be subject to some degree of change and variation during the detailed design and construction process.

An outline Construction Environmental Management Plan (CEMP) and C&D WMP has been prepared to accompany the planning application. The main contractor will be required to prepare a detailed CEMP prior to commencement of construction which may refine the above waste estimates.

15.4.2 Operational Phase

Once operational, it is anticipated that very small amount of waste will be generated at the GIS substation from ESB networks staff during their inspections and maintenance works.

These wastes may include organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons) and non-recyclable waste. Waste fuels/oils, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently.

15.5 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

This section details the potential waste impacts associated with the Proposed Development.

15.5.1 Construction Phase

As detailed in Section 15.4.1, the Proposed Development will generate surplus excavated material, as well as waste from the welfare facilities and site office at the site compound.

Surplus excavated material classified as waste (as opposed to a by-product) will be segregated at source and transferred directly from site by a suitably permitted waste contractor(s) to suitably authorised receiving facilities.

Waste materials generated at the site compound from the welfare facilities and site office will be temporarily stored in dedicated receptacles at the site compound pending collection by a suitably permitted waste contractor(s). The waste storage area will be easily accessible to waste collection vehicles.

If waste material is not managed and stored correctly on the site or at the site compound, it is likely to lead to litter or pollution issues at site, site compound and/or on adjacent properties. The knock-on effect of litter issues is the presence of vermin on the site, site compound and the surrounding areas. Waste material will be appropriately managed on site so as to avoid these issues.

The use of non-permitted waste contractors for transportation or unauthorised receiving facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. Removal and reuse/recycling/recovery/disposal of waste material from site will be carried out in accordance with the *Waste Management Act 1996* (as amended), the *Waste Management (Collection Permit) Regulations 2007* (as amended) and the *Waste Management (Facility Permit & Registration) Regulations 2007* (as amended). It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

Wastes will be collected by a suitably permitted contractor(s) and be transferred to suitably registered/permitted/licenced waste facilities for processing and segregation, reuse, recycling, recovery and/or disposal. There are numerous authorised waste facilities in the Leinster region which can accept non-hazardous and hazardous waste materials and acceptance of waste from the Proposed Development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the predicted construction waste materials at facilities in the region.

Where offsite reuse of the wastes generated is not feasible, recycling and/or recovery of the waste will be carried where possible. Recovery and recycling of construction waste has a positive impact on sustainable resource consumption. The use of recycled materials, where suitable, reduces the consumption of natural resources.

There is a quantity of material (topsoil and subsoil) which will need to be excavated to facilitate the Proposed Development. Clean inert soils and stones excavated will be reused on site as backfill, where practical. In the event that potentially contaminated material is encountered, correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on the health and safety of workers as well as on the receiving environment, both on and off-site. Contaminated material will need to be removed off-site for appropriate treatment and/or disposal.

Reuse of suitable clean inert excavated material onsite, where practical, will reduce consumption of natural quarry resources.

The potential effect of construction waste generated from the Proposed Development is considered to be ***short-term*** and ***not significant.***

15.5.2 Operational Phase

No waste will be generated from the operation of the proposed 110kV transmission line or 49kVA cable installation.

Small volumes of waste will be generated at the proposed 110kV GIS substation. The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill.

The nature of the Proposed Development means the generation of waste materials during the operational phase is an unavoidable impact. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion into recycled products (e.g. paper mills and glass recycling).

The waste materials generated on a weekly basis will require site storage within the substation prior to collection by an authorised waste contractor. Waste collection vehicles will be required to service the Proposed Development on a regular basis to remove waste.

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the Proposed Development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the Proposed Development and the surrounding areas.

The use of non-permitted waste contractors or unlicensed facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

The potential impact of operational waste generation from the Proposed Development is considered to be ***long-term, negative*** and ***not significant***.

15.5.3 Do Nothing Scenario

If the Proposed Development was not to go ahead there would be no additional construction or operational waste generation at the site until such time as an alternative development to facilitate provision of permanent power supply to the site is granted permission and constructed.

15.6 REMEDIAL AND MITIGATION MEASURES

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

15.6.1 Construction Phase

A project specific C&D WMP has been prepared in line with the requirements of the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* published in 2006 by the Department of Environment Heritage and Local Government (DoEHLG). Adherence to the high level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the construction phase of the Proposed Development. Prior to commencement of construction, the main contractor will be required to refine/update this document to detail specific measures to minimise waste generation and resource consumption and provide details of the proposed waste contractors and destinations of each waste stream.

Suitable topsoil and subsoil will be reused on site as backfill, where possible. However, it is currently envisaged that c. 17,000m^3 will require removal offsite (as advised by the project engineers, CSEA). It will be reused offsite where practical and where it cannot be reused, it will be recycled/recovered.

In addition, the following mitigation measures will be implemented:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated:
  - Soils and stones
  - In addition, the following wastes will be segregated at the site compound:
    - Organic (food) waste
    - Packaging (paper/card/plastic)
    - Mixed dry recyclables
    - Mixed non-recyclable waste
- All excavations will be carefully monitored by a suitably qualified person to ensure that potentially contaminated soil is identified and segregated, if encountered. In the event that any potentially contaminated material is encountered, it will be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous and further classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*, which establishes the criteria for the acceptance of waste at landfills.
- Waste materials generated at the site compound will be stored in suitable receptacles in designated areas of the site compound;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels,

oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A waste manager will be appointed by the main contractor to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

As surplus soils and stones will require removal from site, any nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, which requires removal off-site. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the *EC (Waste Directive) Regulations (2011)* as previously referred to Section 15.4 and detailed in the C&D WMP (Appendix 15.1).

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997 – 2009* and the *EMR Waste Management Plan (2015 - 2021)*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

15.6.2 Operational Phase

Small volumes of waste may be generated at the proposed 110kV GIS substation. No waste will be generated from the operation of the proposed 110kV transmission line or 49kVA cable installation.

Any waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the substation.

In addition, the following mitigation measures will be implemented:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
  - Dry Mixed Recyclables;
  - Organic food/green waste;
  - Mixed Non-Recyclable Waste;
  - Batteries (non-hazardous and hazardous);
  - Waste electrical and electronic equipment (WEEE) including computers, printers and other ICT equipment; and
  - Cleaning chemicals (solvents, pesticides, paints, adhesives, resins, detergents, etc.).
- All waste materials will be stored in colour coded bins or other suitable receptacles in a designated, easily accessible location. Bins will be clearly labelled with the approved waste type to ensure there is no cross contamination of waste materials;

- All waste collected from the Proposed Development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available;
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

These mitigation measures will ensure the waste arising from the Proposed Development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997* and the *EMR Waste Management Plan (2015 - 2021)*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

15.7 PREDICTED IMPACTS OF THE PROPOSED DEVELOPMENT

The implementation of the mitigation measures outlined in Sections 15.6.1 and 15.6.2 will ensure that a high rate of reuse, recovery and recycling is achieved at the Proposed Development during the construction phase of the project. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

15.7.1 Construction Phase

A carefully planned approach to waste management as set out in Section 15.6.1 and adherence to the C&D WMP during the construction and demolition phase will ensure that the impact on the environment will be ***short-term, neutral*** and ***imperceptible***.

15.7.2 Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 15.6.2 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be ***long-term, neutral*** and ***imperceptible***.

15.8 RESIDUAL IMPACTS

Adherence to the mitigation measures outlined in Section 15.6.1 and 15.6.2 will ensure that there are no significant impacts on resource or waste management from the Proposed Development. The management of waste during the construction phase in accordance with the Construction & Demolition Waste Management Plan (C&D WMP) and during the operational phase in accordance with the mitigation measures in Section 15.6.2 will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy. The residual impact will be ***neutral*** and ***imperceptible***.

15.9 CUMULATIVE IMPACTS

The construction of the Proposed Development and the Permitted Development within the overall landholding will require site clearance, excavations and levelling which will generate waste. Mitigation measures will be carried out for the Proposed Development, and provided that mitigation measures set out in the EIA Reports for all

proposed permitted and planned developments are implemented during construction of the Proposed Development, the cumulative impact will be ***short term*** and ***imperceptible***.

The waste quantities which will be generated from the operation of the Proposed and Permitted developments within the overall landholding are anticipated to be relatively small. As such, the predicted impact of the build out of the site on waste management will be ***long term*** and ***imperceptible***.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative impact will be ***long-term*** and ***imperceptible***.

15.10 REFERENCES

1. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
2. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2012*.
3. Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate and associated legislation includes:
    a. European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
    b. Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.
    c. Waste Management (Facility Permit and Registration) Regulations 2007 (S.I No. 821 of 2007) as amended.
    d. Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended.
    e. European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
    f. Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
    g. Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    h. European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    i. European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended.
    j. Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended.
    k. European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 430 of 2015)
    l. Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended.
    m. Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended.
    n. European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
    o. European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
    p. European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended.

4. Department of Environment, Communities and Local Government (DoECLG), *A Resource Opportunity - Waste Management Policy in Ireland* (2012).
5. Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020)
6. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).
7. BS 5906:2005 Waste Management in Buildings – Code of Practice
8. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).
9. Environmental Protection Agency (EPA), *National Waste Statistics Web Resource – Progress to EU Targets* (October 2018)
10. Meath County Council (MCC)*, Meath County Develoment Plan 2013-2029 (2015)*
11. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015)
12. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
13. Litter Pollution Act 1997 (S.I. No. 12 of 1997) as amended.
14. Protection of the Environment Act 2003, (No. 27 of 2003) as amended.

APPENDIX 15.1

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

PREPARED BY AWN CONSULTING LIMITED

awnconsulting

The Tecpro Building,
Clonshaugh Business & Technology Park,
Dublin 17, Ireland.

T: + 353 1 847 4220
F: + 353 1 847 4257
E: info@awnconsulting.com
W: www.awnconsulting.com

APPENDIX 15.1

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

PROPOSED 110KV GIS SUBSTATION, 110KV TRANSMISSION LINE AND 49KVA CABLE INSTALLATION, DROGHEDA, CO. MEATH

Technical Report Prepared By

Elaine Neary BA MApplSc MCWIM
Associate

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1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Construction and Demolition (C&D) Waste Management Plan (WMP) for a proposed development within the IDA Business and Technology Park, Drogheda, Co Meath. The site is greenfield, so no demolition works are required.

The purpose of this C&D WMP is to provide information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with current legal and industry standards including the *Waste Management Acts 1996-2011* and associated Regulations [1], *Protection of the Environment Act 2003* as amended [2], *Litter Pollution Act 1997* as amended [3] and the *Eastern-Midlands Region Waste Management Plan 2015-2021* [4]. In particular, this C&D WMP aims to ensure maximum recycling, re-use and recovery of waste with diversion from landfill, where possible. It also seeks to provide guidance on the appropriate collection and transport of waste to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil or water resources).

In the preparation of the C&D WMP consideration has been given to the requirements of National and Regional waste policy, legislation and other guidelines (referred to in Section 2.0). However, in determining the structure and content of the document, the following two publications have been referenced in particular:

- Department of the Environment, Heritage and Local Government (DoEHLG), *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006) [5].
- FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers,* (2002) [6].

These Guidance Documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.0 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Government issued a policy statement in September 1998 titled as *'Changing Our Ways'* [7] which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland [7]. The target for C&D waste in this Strategy was to recycle at least 50% of C&D waste within a five-year period (by 2003), with a progressive increase to at least 82% over fifteen years (by 2013) [7].

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report titled *Recycling of Construction and Demolition Waste* [8] concerning the development and implementation of a voluntary construction industry programme to meet the governments objectives for the recovery of construction and demolition waste.

A number of additional National and Regional Waste Policies, Strategies and Reports have been issued in previous years including:

- Department of the Environment, Heritage and Local Government (DoEHLG), *Preventing and Recycling Waste - Delivering Change* (2002);
- DoEHLG, *Making Ireland's Development Sustainable – Review, Assessment and Future Action, World Summit on Sustainable Development* (2002);
- DoEHLG, *Taking Stock and Moving Forward* (2004);
- DoEHLG, *National Strategy on Biodegradable* Waste (2006); and
- DoEHLG, *A Resource Opportunity* (2012).

The most recent national policy document was published in July 2012, entitled *A Resource Opportunity - Waste Management Policy in Ireland* [9]. This document stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention. The document sets out a number of actions in relation to C&D waste - it commits to undertake a review of specific producer responsibility requirements for C&D projects over a certain threshold.

In September 2020 the government released a new action plan for Ireland to cover the period of 2020-2025. This plan '*A Waste Action Plan for a Circular Economy'* [10] was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities. The plan identifies opportunities for the application of circular economy principles across a range of areas such as food, end-of-waste and by-products, where improvements in the regulatory regime can divert material from waste to beneficial reuse. It also gives full effect to many of the commitments in the Programme for Government, including the introduction of a deposit and return scheme for plastic bottles, and measures to support the development of indigenous treatment capacity, supporting national economic recovery.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the Forum for the Construction Industry, in the Task Force B4 final report. The NCDWC subsequently produced *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* in July 2006 in conjunction with the Department of the Environment, Heritage and Local Government (DoEHLG).

The guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted construction and demolition wastes;
- Procedures to prevent and minimise wastes;
- Options for reuse/recycling/recovery/disposal of construction and demolition wastes;
- Provision of training for Waste Manager and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of proposed consultation with relevant bodies i.e. waste recycling companies, Meath County Council, etc.

2.2 Regional Level

The proposed development is located in the Local Authority area of Meath County Council (MCC).

The Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021 is the current regional waste management plan for the MCC area. The plan does not set specific targets for construction and demolition (C&D) waste, however, the Waste Framework Directive (WFD) sets a target for Member States of "70% preparing for reuse, recycling and other recovery of construction and demolition waste (excluding natural soils and stones and hazardous wastes)" to be achieved by 2020, which is highlighted in the regional plan. Other mandatory targets set in the Plan include:

- A 1% reduction per annum in the quantity of household waste generated over the period of the plan;
- Achieve a reuse/recycling rate of 50% of municipal waste by 2020; and
- Reduce to 0% the direct disposal of residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

Municipal landfill charges in Ireland are based on the weight of waste disposed. Landfill charges in the region are approximately €130-150 per tonne of waste which includes a €75 per tonne landfill levy introduced under the *Waste Management (Landfill Levy) (Amendment) Regulations 2012*.

The *Meath County Development Plan 2013 – 2019* [11] sets out a number of policies and objectives for Meath in line with the objectives of the regional waste management plan. The plan identifies the development of recycling in order to minimise the use of landfill as the main objective of the County Council. Waste policies and objectives with a particular relevance to the proposed development are:

Policies:

- *WM POL 7: To encourage the recycling of construction and demolition waste and the reuse of aggregate and other materials in future construction projects.*

Objectives:

- *WM OBJ 7: To promote the implementation of Waste Management Activities in accordance with 'Best Practice' and national policy.*
- *WM OBJ 8: To facilitate the implementation of national legislation and national and regional waste management policy.*
- *WM OBJ 13: To support the development of facilities to cater for commercial waste not provided for in the kerbside collection system such as WEEE, C&D type waste and hazardous materials in accordance with the requirements of the North East Waste Management Plan.* (Note: this has been replaced by the Eastern-Midlands Region Waste Management Plan 2015 – 2021)
- *WM OBJ 17: To require developers to prepare construction and demolition waste management plans for new construction projects over certain thresholds which shall meet the relevant recycling/recovery targets for such waste in accordance with the national legislation and national and regional waste management policy*
- *WM OBJ 18: To seek to ensure in cooperation with relevant authorities that waste management facilities are appropriately managed and monitored according to best practice to maximise efficiencies and to protect human health and the natural environment.*

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
    - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
    - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
    - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
    - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
    - Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
    - European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 430 of 2015)
    - Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
    - Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
    - Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
    - European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
    - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended.
- Environmental Protection Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.

These Acts and subordinate Regulations enable the transposition of relevant European Union Policy and Directives into Irish law.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Acts 1996 – 2011 and subsequent Irish legislation, is the principle of *"Duty of Care"*. This implies that the waste producer is responsible for waste from the time it is generated through until its legal reuse, recycling, recovery and/or disposal (including its method of reuse, recycling, recovery and/or disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final waste reuse, recycling, recovery and/or disposal site. Following on from this is the concept of *"Polluter Pays"* whereby the waste producer is liable to be prosecuted for pollution incidents, which

may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the appointed construction contractor(s) are legally compliant with respect to waste transportation, reuse, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and reuse/recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended, or a waste or Industrial Emissions (IE) licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The proposed development consists of the provision of a 110kV GIS substation and associated dropdown 110kV transmission lines along with associated and ancillary works. within the IDA Business and Technology Park, Drogheda, Co Meath.

A detailed description of the development is provided in Chapter 2 (Description of the Proposed Development) of this EIA Report. A description of the characteristics of the development relevant to waste are described in Section 15.4 of Chapter 15 (Waste Management).

3.2 Overview of the Non-Hazardous Wastes to be produced

The construction of foundations for the 110kV GIS substation, the installation of ducting for the 110kV underground transmission lines, the installation of the 49kVA electricity connection and associated ancillary development (as described in detail in Chapter 2) will require the excavation of topsoil and subsoil.

The optimum depth of excavation required to facilitate installation of the 110kV ducting for the transmission line is 1.21m below ground level (bgl) but may increase to up to c. 1.5m at utility crossings. The optimum width of each trench is 1.02m, however this may vary depending on ground conditions and existing services.

The optimum depth of excavation required to facilitate installation of the ducting for the 49kVA cable installation is c. 0.95-1m below ground level (bgl) but may increase to up to c. 1.5m at utility crossings. The optimum width of each trench is c.0.6m, however this may vary depending on ground conditions and existing services to up to c. 1m.

Suitable topsoil and subsoil will be reused on site as backfill, where possible. However, it is currently envisaged that c. 17,000m^3 will require removal offsite (as advised by the project engineers, CSEA) for offsite reuse, recovery and/or disposal.

The importation of fill materials will be required for construction of foundations and to reinstate the trenches. The project engineers, CSEA, have estimated that the importation of up to 4800m^3 of fill material will be required.
During the construction phase of the proposed GIS substation and unit substation, waste produced will include surplus steel and other metal materials and broken/off-cuts of timber, plasterboard, concrete etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials are also likely to be generated.

Waste will also be generated by construction workers. These wastes would generally be organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided at the site compound during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices. The welfare facilities and site office for the Proposed Development will be located in a site compound on an existing data storage facility site to the south of the Proposed Development where construction works are currently ongoing.

The contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

3.3 Potentially Hazardous Waste

3.3.1 Contaminated Soil

As stated in Chapter 6 (Land, Soils, Geology and Hydrogeology), there is no evidence of any historical waste disposal or source of contamination on the site.

A site investigation was carried out at the site by IGSL in 2020 which included trial pitting and boreholes. Soil samples were collected from the trial pits and boreholes for soil analysis for the following parameters:

- Metals, PAH, TPH, BTEX, PCB; general psycho-chemicals parameters;
- CEN 10:1: Metals, general psycho-chemicals parameters; and
- Waste Acceptance Criteria (WAC) analysis.

The soil samples were compared to a Generic Assessment Criteria (GAC) derived to be protective of human health, water bodies (including groundwater) and also ecology for a commercial/industrial end use (LQM/CIEH S4Uls GACs). Comparison of the soil results with these GACs do not show any exceedances which would indicate contamination or risk to ecology or human health.

The soil analysis results were also compared to the landfill acceptance criteria as specified in the *European Communities (EC) Council Decision 2003/33/EC* which identifies the maximum concentration of selected key contaminants permitted for acceptance at authorised waste facilities. The WAC criterion sets threshold concentrations for contaminants to classify the material under three categories; inert, non-hazardous and hazardous. None of the soils analysed showed any exceedances of inert WAC thresholds. Therefore, the soil would be classified as inert for disposal purposes based on the soil samples analysed.

The authorised waste facilities may also require the soil to be classified as Hazardous or Non-Hazardous in accordance with the EPA publication *Waste Classification – List*

of Waste & Determining if Waste is Hazardous or Non-Hazardous [12] using the HazWasteOnline classification tool (or similar approved methodology). This can be done based on the soil analysis data obtained from the IGSL site investigation.

Further details are included in Chapter 6 (Land, Soils, Geology and Hydrogeology Chapter). The borehole logs, trial pit logs, analysis report and site investigation report are included as appendices to Chapter 6.

Any potentially contaminated material (in the unlikely event that it is encountered), should be segregated, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled *'Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* using the *HazWasteOnline* application (or similar approved classification method). If the material is to be disposed of to landfill, it will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC* and landfill specific criteria. This legislation sets limit values on landfills for acceptance of waste material based on properties of the waste including potential pollutant concentrations and leachability.

Excavation works will be carefully monitored by a suitably qualified person to ensure any potentially contaminated soil is identified and segregated in accordance with the above procedure.

Further details on the soil quality at the site is provided in Chapter 6 (Land, Soils, Geology and Hydrogeology).

3.3.2 Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and the site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil waste generated at the site.

3.3.3 Other Known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, waste electrical and electronic equipment (WEEE) containing hazardous components, printer/toner cartridges and batteries (Lead, Ni-Cd or Mercury) may be generated from the temporary site offices during construction works. These wastes will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

3.4 Main Construction and Demolition Waste Categories

The main non-hazardous and hazardous waste streams that may typically be generated by the construction activities at the proposed site are presented in Table 3.1. The List of Waste code (also referred to as the European Waste code or EWC) for each waste stream is also shown.

Table 3.1. Typical waste types generated, and List of Waste Codes (* individual waste type may contain hazardous materials)

Waste Material	List of Waste Code
Soil and stones	17 05
Concrete, bricks, tiles, ceramics	17 01
Wood, glass and plastic	17 02
Bituminous mixtures*	17 03 01/02
Metals (including their alloys)	17 04
Gypsum-based construction material	17 08
Paper and cardboard	20 01 01
Mixed construction and demolition waste	17 09 04
Electrical and electronic components	20 01 35
Biodegradable Kitchen Waste and Canteen Waste	20 01 08
Green waste	20 02 01
Sewage Sludge	20 03 04/06
Batteries and accumulators*	20 01 33-34
Wood preservatives*	03 02
Liquid fuels*	13 07
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.) *	20 01 13-19, 27-30
Soil and stones containing dangerous substances (if encountered) *	17 05 03
Other construction and demolition wastes containing dangerous substances*	17 09 03

4.0 ESTIMATED WASTE ARISINGS

4.1 Demolition Waste Generation

No demolition will be required to facilitate the construction of the new development.

4.2 Construction Waste Generation

The quantity of surplus excavated material that will be generated has been estimated by the project engineers, CSEA, to be c. 17,000m^3 which will be removed off site for reuse and/or recycle/recovery.

An assessment has been undertaken to estimate the quantity of other construction wastes likely to be generated from the construction of the GIS substation, client control building and unit substation building.

Table 4.1 presents the estimated construction waste quantities based on the gross floor area of the buildings to be constructed and includes indicative targets for off-site reuse, recycling and recovery.

Table 4.1 Estimated on and off-site reuse, recycling and disposal rates for construction waste (based on floor size)

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Concrete, Bricks, Tiles, Ceramics, Plasterboard	5.8	20	1.2	75	4.4	5	0.3
Metals	2.9	5	0.1	80	2.3	15	0.4
Other	4.7	10	0.5	40	1.9	50	2.3
Total	13.4		1.8		8.6		3.1

It is expected that wastes generated (other than excavated material) from other construction activities will be negligible and will generally comprise waste generated from construction workers. These wastes would generally be organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided at the site compound during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from the site office.

The welfare facilities and site office for the Proposed Development will be located in a site compound on an existing data storage facility site to the south of the Proposed Development where construction works are currently ongoing.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

An outline Construction Environmental Management Plan (CEMP) has been prepared to accompany the planning application. The appointed main contractor will be required to prepare a detailed CEMP prior to commencement of construction which may refine the above waste estimates.

4.2 Proposed Waste Management Options

4.2.1 Waste Management Options for Excavated Materials

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. Any excavations carried out will be required to facilitate construction works so the preferred option of prevention will not be applicable. However, the volume of material removed from site will be minimised where possible. It is currently proposed that c. 17,000m^3 of excavated material will require removal from site.

In the event that any excavated material is removed off-site for reuse as a by-product (and not as a waste), it will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. Article 27 requires that certain conditions are met and that by-product decisions are made to the EPA via their online notification form.

Similarly, if any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27. However, it is not currently anticipated that any excavated material will be removed offsite or imported onto the site for reuse as a by-product.

If any excavated material requires removal from site and is deemed to be a waste, then removal and reuse/recycling/ recovery/disposal of the material will be carried out in accordance with the *Waste Management Acts 1996 – 2011* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. The volume of waste removed will dictate whether a COR, permit or licence is required by the receiving waste facility. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the unlikely event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

4.2.2 Waste Management Options for other Construction Wastes

Waste materials generated will be segregated on-site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arisings requiring reuse, recycling, recovery or disposal off-site will be transferred to a facility holding the appropriate COR, permit or licence, as required.

Mixed C&D waste (classified under the List of Waste code 17 09 04) is permitted for acceptance at a number of waste facilities in the region including Integrated Material Solutions landfill in north Dublin and a number of waste transfer stations.

Written records will be maintained by the contractor detailing the waste arising throughout the construction phase, the classification of each waste type, the contact details and waste collection permit number of all waste contractors who collect waste from the site and the end destination details for all waste removed and disposed offsite.

Dedicated storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc., as required. The containers used for storing hazardous liquids will be appropriately bunded or will be stored on suitably sized spill pallets.

The management of the main construction waste streams are detailed as follows:

<u>Concrete</u>
Concrete will be segregated and transferred off site for appropriate reuse, recycling, recovery and/or disposal.

Hard Plastic
As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber
Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be placed into a dedicated skip and recycled off-site. Clean timber is typically recycled as chipboard.

Metal
Metals will be segregated and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard
Plasterboard from the construction phase will be stored in a separate skip, pending collection for recycling. The site manager and project engineers will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass
Glass materials will be segregated for recycling, where possible.

Waste Electrical and Electronic Equipment
Waste electrical and electronic equipment (WEEE) will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling off site.

Other Recyclables
Where any other recyclable wastes such as cardboard and soft plastic are generated, these will be segregated at source into dedicated skips and removed offsite.

Non-Recyclable Waste
Construction waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team (see Section 6.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Hazardous Wastes
On-site storage of any hazardous wastes produced (i.e. contaminated soil in the unlikely event that it is encountered and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that until the main contractor is appointed, it is not possible to provide information on the specific destinations of each waste stream. Prior to commencement construction of each data storage facility and removal of any waste off-site, details of the proposed destination of each waste stream will be provided to MCC.

4.3 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the waste contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the contractor.

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 – 2011* as amended, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project Waste Manager (see Section 6.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority COR, waste permit or EPA Waste/IE Licence for that site will be provided to the nominated project Waste Manager. If the waste is being shipped abroad, a copy of the TFS document will be obtained from Dublin City Council (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

If any surplus soil or stone is being removed from the site for reuse on another construction site as a by-product, this will need to be done in accordance with Article 27 of the *EC (Waste Directive) Regulations, 2011*. Similarly, if any soil or stone are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27.

All information will be entered in a waste management recording system to be maintained on site.

5.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is provided below. The total cost of construction waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

5.1 Reuse

By reusing materials on site, there will be a reduction in the transport and offsite recycling/recovery/disposal costs associated with the requirement for a waste contractor to take the material away to landfill.

Clean and inert excavated material which cannot be reused on site may be used as capping material for landfill sites, or for the reinstatement of quarries, etc. as previously discussed. This material is often taken free of charge for such purposes, reducing final waste disposal costs.

5.2 Recycling

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips. Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will typically charge less to take segregated wastes, such as recyclable waste, from a site than mixed waste streams.

5.3 Disposal

Landfill charges in the Eastern-Midlands region are currently at around €130-150 per tonne (which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a fee for provision and collection of skips.

Collection of segregated construction waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a registered, permitted or licensed facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill.

6.0 TRAINING PROVISIONS

A member of the construction team will be appointed as the Waste Manager to ensure commitment, operational efficiency and accountability during the construction phase of the project.

6.1 Waste Manager Training and Responsibilities

The nominated Waste Manager will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid him/her in the organisation, operation and recording of the waste management system implemented on site. The Waste Manager will have overall responsibility to oversee, record and provide feedback to the Project Manager on everyday waste management at the site. Authority will be given to the Waste Manager to delegate responsibility to subcontractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The Waste Manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The Waste Manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this C&D WMP.

6.2 Site Crew Training

Training of the site crew is the responsibility of the Waste Manager and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the C&D WMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the waste storage areas. A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

7.0 RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arising's on site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site the waste collection vehicle driver should stop at the site office/security hut and sign out as a visitor and provide the security personnel or waste manager with a waste docket (or WTF for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC/LoW

The waste transfer dockets will be transferred to the site waste manager on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the SDCC Waste Regulation Unit when requested.

Alternatively, each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets/WTF maintained on file and available for inspection on site by the main contractor as required.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR/permit/licence for the receiving waste facilities and maintain a copy on file available for inspection on site as required.

8.0 OUTLINE WASTE AUDIT PROCEDURE

8.1 Responsibility for Waste Audit

The appointed Waste Manager will be responsible for auditing the site during the construction and demolition phases of the project.

8.2 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported on or off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established reuse/recovery/recycling/disposal targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved. Waste management costs will also be reviewed.

Upon completion of the construction phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total reuse, recycling, recovery and disposal figures for the development.

9.0 CONSULTATION WITH RELEVANT BODIES

9.1 Local Authority

Once the main contractor has been appointed and prior to removal of any waste materials offsite, details of the proposed destination of each waste stream will be provided to MCC for their approval.

MCC will also be consulted, as required, throughout the construction phase in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

9.2 Recycling/Salvage Companies

Companies that specialise in C&D waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. In addition, information regarding individual construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation, the means by which the wastes will be collected and transported off-site and the recycling/reclamation process each material will undergo off site.

10.0 REFERENCES

1. Waste Management Act 1996 (No. 10 of 1996) as amended 2001 (No. 36 of 2001), 2003 (No. 27 of 2003) and 2011 (No. 20 of 2011). Subordinate and associated legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended 2011 (S.I. No. 323 of 2011)
    - Waste Management (Collection Permit) Regulations 2007 (S.I No. 820 of 2007) as amended 2008 (S.I. No. 87 of 2008) and 2016 (S.I. No. 24 of 2016)
    - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended 2008 (S.I. No. 86 of 2008), 2014 (S.I. No. 310 and S.I. No. 546 of 2014) and 2015 (S.I. No. 198 of 2015)
    - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004) and 2010 (S.I. No. 350 of 2010)
    - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended 1998 (S.I. No. 164 of 1998), 2001 (S.I. No. 356 of 2002) and 2011 (S.I. No. 126 and No. 192 of 2011)
    - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
    - European Communities (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended 2015 (S.I. No. 190 of 2015)
    - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
    - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended 2015 (S.I. No. 542 of 2015)
    - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
    - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended 2014 (S.I. No. 349 of 2014) and 2015 (S.I. No. 347 of 2015)
    - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended 2000 (S.I. No. 73 of 2000)
    - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended by European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
    - The European Communities (Trans frontier Shipment of Hazardous Waste) Regulations 1988 (S.I. No. 248 of 1988) o European Union (Properties of Waste Which Render It Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
2. Environmental Protection Act 1992 (Act No. 7 of 1992) as amended by the Protection of the Environment Act 2003 (Act No. 27 and S.I. No. 413 of 2003) and amended by the Planning and Development Act 2000 (Act No. 30 of 2000) as amended.
3. Litter Pollution Act 1997 (Act No. 12 of 1997) as amended by the Litter Pollution Regulations 1999 (S.I. No. 359 of 1999) and Protection of the Environment Act 2003, as amended.
4. Eastern-Midlands Waste Region, *Eastern-Midlands Region Waste Management Plan 2015 – 2021* (2015).

5. Department of the Environment, Heritage and Local Government (DoEHLG), *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*, (2006).
6. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*, (2002).
7. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
8. Forum for the Construction Industry, *Recycling of Construction and Demolition Waste* (1999).
9. Department of Environment, Communities and Local Government (DoECLG), *A Resource Opportunity - Waste Management Policy in Ireland* (2012).
10. Department of Communications, Climate Action and Environment (DCCAE), Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025 (Sept 2020)
11. Meath County Council (MCC), *Meath County Development Plan 2013-2019* (2016).
12. Environmental Protection Agency (EPA), *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015).
13. EPA, *National Waste Database Reports 1998 – 2012*.

16.0 CUMULATIVE IMPACTS

16.1 INTRODUCTION

This chapter of the EIA Report considers the potential cumulative impacts or effects on the environment. Cumulative impacts or effects are changes in the environment that result from numerous human-induced, small-scale alterations. Cumulative impacts can be thought of as occurring through two main pathways: first, through persistent additions or losses of the same materials or resource, and second, through the compounding effects as a result of the coming together of two or more effects.

The cumulative effects are analysed in this chapter in accordance with the requirements of the EPA Draft EIA Report Guidelines 2017 and the EIA Directives (2011/92/EU and 2014/52/EU). Cumulative effects are defined in the aforementioned Guidelines as "*the addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects".*

As described in Chapter 2 (Description of the Proposed Development), the Proposed Development will comprise a GIS substation which will accommodate 8 bays, including 2 for future development in the area, a 49kVA (underground) electrical supply, client control building and two dropdown 110kV transmission lines comprising replacement of two existing masts and replacement with two new masts and underground 110kV cables A full description of the Proposed Development is provided in Chapter 2. This chapter considers the potential cumulative impact of the Proposed Development with the Permitted Development (ref:MCC ref: LB/191735), future Indicative Masterplan Development (as far as practically possible) on the site and the committed developments in the locality. Also considered is the upgrade of the Platin-Drybridge 110kV Circuit. A programme for the delivery of the upgrade of the Platin-Drybridge 110kV Circuit is being developed, with works expected to be completed by 2024. Whilst details of the upgrade works are not yet known they will likely comprise recapping of shear blocks at the base of OHL structures and other essential maintenance works including painting, repair and replacement of conductors, fittings, insulators and hardware, rakers and other members, signage, notices and possible replacement or addition of steel towers and/or wood pole sets as necessary. The upgrade will be subject to separate Screening for Appropriate Assessment and Environmental Impact Assessment by EirGrid to examine and assess the potential effects on European Sites and environmental generally, alone or in combination with other plans and projects.

The potential cumulative effects are considered and assessed for each environmental aspect in Sections 16.2 – 16.12. Where the cumulative effects are also dealt with in the relevant Chapters within this EIA Report, this has been crossed referenced where applicable.

16.2 POPULATION AND HUMAN HEALTH

The Proposed Development and Permitted Development will create c.52 no. full-time permanent jobs, as well as creating short term employment in the area during the construction phase.

The Proposed Development and the Permitted Development have been designed to ensure there are no significant effects on human health when taking into account the surrounding land uses and population, as appropriate mitigation measures will be put in place. Future development of the Indicative Masterplan Development will be required to incorporate similar mitigation measures. As such, the cumulative impact of

the Proposed, Permitted and Indicative Masterplan Developments will not have a significant effect on human health as described further below.

As demonstrated by the noise modelling results presented in Chapter 10 (Noise and Vibration), the predicted cumulative noise emissions during the operational phases are compliant with the adopted noise limit values which are based with due consideration of the effect on human health. The cumulative noise model considered the Proposed Development, the Permitted Development and future Indicative Masterplan Development. Furthermore, any change in noise levels associated with additional vehicles at road junctions in the vicinity of the Proposed Development, Permitted Development and future Indicative Masterplan Development on the site is expected to be imperceptible. In essence, the noise levels that are encountered at the nearest noise sensitive locations are predicted to be within relevant noise criteria.

The cumulative impact of the Proposed Development with the Permitted Development and future Indicative Masterplan Development have been described in Chapter 9 (Air Quality and Climate). Air dispersion modelling was undertaken to assess the cumulative impact with reference to EU ambient air quality standards which are based on the protection of human health. As demonstrated by the dispersion modelling results, emissions from the overall site will be compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant effect on human health.

Apart from the Permitted Development and future Indicative Masterplan Development, the permitted developments listed in Appendices 3.1, 3.2 and 3.3 of Chapter 3 generally refer to relatively small projects on existing facilities within the vicinity of the Proposed Development site which are considered to have a negligible impact on the local population. As the Proposed Development together with the Permitted Development and Indicative Masterplan Development will have a positive impact on the immediate hinterland and the Meath-Louth Region through continued expanding employment and the associated economic and social benefits, it is concluded that once appropriate mitigation measures are put in place any cumulative effects on population and human health will be ***positive*** and ***long-term*** and ranging from ***imperceptible*** to ***slight***.

16.3 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

The anticipated cumulative effects of the Proposed Development, Permitted Development and future Indicative Masterplan Development and other Permitted Developments in the locality as outlined in Chapter 3 on land soils and geology are presented below.

In relation to the potential cumulative impact on the land geological or hydrogeological environment during the construction phases, those key engineering works could result in cumulative impact if not adequately mitigated Are as follows:

- Construction works require additional removal of topsoil and subsoil cover and will further increase the vulnerability of the underlying bedrock. Although this is minimised in this local area due to natural thickness of the clayey overburden. Capping of significant areas of the sites by hardstand/ buildings following construction and installation of drainage will minimise the potential for contamination of groundwater;
- Localised contamination of soils and groundwater underlying the site from accidental spillage and leakage from construction traffic and construction

materials may occur unless project-specific Construction Environmental Management Plans (CEMPs) are put in place and complied with. It is proposed that project-specific CEMP's will be put in place for the Proposed Development. A CEMP is in place for the Permitted Development.

In relation to the potential cumulative impacts from the operational stages, the following could result in a cumulative impact if not adequately mitigated:

- Overall increase in hardstanding: Cumulatively developments will result in localised reduced recharge to ground and increase in surface run-off. The aquifer underlying the site is a regionally important karstified (diffuse) aquifer (Rkd) (see Figure 6.4 in Chapter 6). However as there is circa 15 metres of overburden overlying the bedrock aquifer classifying it as already "Low" vulnerability (GSI classification), the cumulative impact is considered to be imperceptible.

- Accidental releases from fuel storage/unloading could contaminate groundwater or soil environments unless mitigated adequately i.e. bunded tanks and delivery areas. Localised accidental discharge of hydrocarbons could occur in car parking areas and along roads unless diverted to surface water drainage system with petrol interceptors. However, all developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislation (primarily the Local Government (Water Pollution) Act, 1977 and 1990 as amended) such that they would be required to manage runoff and fuel leakages. The cumulative impact is considered to be imperceptible.

- There will be a further loss of greenfield area locally as a result of the Proposed Development, the Permitted Development and future Indicative Masterplan Development. However, the area of development is small in the context of the overall agricultural land available in the broader region and the land within the IDA park is already secured and unavailable for agricultural use, subject to grant of permission for the Proposed Development.

The residual cumulative effect on land, soils, geology and hydrogeology for the construction and operation phases are anticipated to be ***long-term***, ***neutral*** in terms of quality and of ***imperceptible*** significance, once the appropriate mitigation measures (including compliance with CEMP) such as those outlined in the EIA Reports for the Proposed Development and Permitted Development are put in place for each current and future development.

16.4 HYDROLOGY

The anticipated cumulative effects in relation to receiving waters are presented below.

In relation to the potential cumulative impact on hydrology during the construction phases, the construction works which would have potential cumulative impacts if not adequately mitigated include:

- Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses. However, there are no direct hydrological pathway to offsite surface water bodies for the Proposed Development, the Permitted Development and future Indicative Masterplan Development. The contractor

for each development will be required to operate in compliance with a specific CEMP which will include measures for management of silt laden waters, therefore there is no risk of impact to receiving waters.

- Contamination of local water sources from accidental spillage and leakage from construction traffic and construction materials may occur unless project-specific CEMPs are put in place for each development and complied with. As stated, there are no surface water features onsite and no direct hydrological pathways to offsite surface water bodies

Potential cumulative impacts during operation include

- Increased hard standing areas will result in increased surface water run-off potential if not controlled to the green field run-off rate. Run-off from the Proposed Development, the Permitted Development and future Indicative Masterplan Development will be attenuated to greenfield run-off rates and as such will not result in any potential for increased flooding on or off site. Each development which receives planning is required by the Local Authority to comply with the Greater Dublin Strategic Drainage Strategy (GDSDS) and Local Authority requirements by providing suitable attenuation on site to ensure greenfield run-off rates are maintained and ensure that there is no increase in off-site flooding as a result of the development.

- Increased risk of accidental releases from fuel storage/delivery unless mitigated adequately. Increased risk of accidental discharge of hydrocarbons from car parking areas and along roads and unless diverted to surface water system with petrol interceptor. Run-off from the Proposed Development and the Permitted Development will be treated through a SUDs system and interceptors to ensure water quality is compliant with water quality standards outlined in SI no 77 of 2019. All developments are required to manage water quality in compliance with surface water regulations.

- Increase in wastewater loading and water supply requirement is an impact of all development: All Proposed Developments will require approval from Irish Water (IW) confirming available capacity in the water and wastewater infrastructure to serve the development.

The surface water and foul drainage infrastructure and water supply requirements for the Permitted Development has been designed to accommodate the future Indicative Masterplan Development and the Proposed Development. The infrastructure includes attenuation ponds and interceptors to manage water flow and quality. IW provided a CoF for the Proposed Development on (IW Reference Number: CDS19007702) which confirms that a foul water and water supply connection to IW is available.

The residual cumulative impact on water and hydrology for the construction and operation phases is anticipated to be ***long-term***, ***neutral*** in terms of quality and of ***imperceptible*** significance, once appropriate mitigation measures to manage water quality runoff in compliance with legislative requirement are put in place for each development.

16.5 BIODIVERSITY

As part of the Screening for an Appropriate Assessment (AA), in addition to the Proposed Development, other relevant projects and plans in the region must also be considered at this stage. This step aims to identify at this early stage any possible

significant cumulative effects / impacts of the Proposed Development with other such plans and projects on the Natura 2000 sites. Refer to Table 8.1 of Chapter 8 for a list of Natura 2000 sites within 15km of the Proposed Development site.

The developments listed in Appendix 3.1, 3.2 and 3.3 of Chapter 3 will have no predicted impacts on Natura 2000 sites and the Proposed Development will have no predicted impacts on Natura 2000 sites, therefore it is possible to conclude that significant effects can be excluded at the screening stage for these developments.

The Meath County Development Plan 2013 – 2019 in complying with the requirements of the Habitats Directive requires that all Projects and Plans that could affect the Natura 2000 sites in the same zone of influence of the Proposed Development site would be initially screened for Appropriate Assessment and if requiring Stage 2 AA, that appropriate employable mitigation measures would be put in place to avoid, reduce or ameliorate negative impacts. All significant developments are similarly required to present an assessment of the impact on local biodiversity and this is considered by the planning authority in terms of national, regional and local plans and policies for biodiversity management. Given the consideration of other Projects and Plans and that the Proposed Development will have no significant effects on biodiversity, there are no predicted cumulative effects on biodiversity.

Any new applications for the project area will initially be assessed on a case by case basis by MCC and LCC which will determine the requirement for AA Screening as per the requirements of Article 6(3) of the Habitats Directive.

16.6 AIR QUALITY AND CLIMATE

The dust mitigation measures outlined in Chapter 9, Section 9.6.1 to be applied during construction will avoid significant cumulative impacts on air quality. With appropriate mitigation measures in place, the predicted cumulative impacts on air quality and climate associated with the construction phase of the Proposed Development and the permitted and proposed datacentre developments or simultaneous construction of any other proposed or Permitted Developments within 350m of the Proposed Development site are deemed *short-term* and *imperceptible*.

It should be noted that the 110kV transmission line and 49kVA cable installation will be underground once construction is completed. There will be no emissions to air quality or climate during the operational phase of the 110kV transmission line, 49kVA cable installation, the GIS substation or new cable bays. Therefore, there are no cumulative impacts on air quality or climate from the operational phase of the Proposed Development

The air dispersion modelling assessment assessed the impact to air quality from the build out of the overall datacentre site (i.e. the Permitted Development as well as indicative future Masterplan development of two further data storage facilities). The results indicate that the ambient ground level NO_2 concentrations are within the relevant air quality standards for NO_2 at all locations beyond the site boundary assuming minimum stack heights of 23m for all diesel generators at the site (including those associated with the indicative future development at the site). The location and scale of the proposed 110kV substation compound at the site was taken into consideration in the air quality modelling in so far as the structure has potential to impact on air dispersion at the site but it is not a potential source of air emissions. The presence of the proposed substation was found to have an imperceptible impact on air dispersion.

In addition, a review of industrial emissions licences (IED licences) issued by the EPA for the area surrounding the Proposed Development show that there are no licenced facilities with NO_x (as NO_2) emissions to the atmosphere within 1km of the site boundary. For any future development with emissions to atmosphere which may occur within the vicinity of the site, the proposed facility would be required to apply for, and comply with, emissions limit values as stipulated in an IED licence.

The cumulative electricity usage for the Proposed Development, the Permitted Development and the future Indicative Masterplan Development would be equivalent to 0.89% of Ireland's national annual CO_2 emissions. Indirect air emissions from electricity power generating stations are covered under the individual licences for these sites which are monitored and enforced by the EPA, ensuring emissions do not significantly impact on ambient air quality.

A review of other permitted developments in the wider area, as outlined in Chapter 3, was conducted and it was found that there were no developments of significance with air emissions that required inclusion in this cumulative assessment as there is no potential for significant impacts. The cumulative impacts to air quality and climate from simultaneous operation of the Proposed Development, the Permitted Development and Indicative Masterplan Development at the site and nearby permitted developments are deemed ***long-term, not significant*** in terms of significance and ***negative*** in terms of quality (following the EPA terminology for description of effects in EIA Reports).

16.7 NOISE AND VIBRATION

During construction of the Proposed Development, the noise and vibrations associated with construction work on the proposed cable installation routes, cable bays and substation will typically be lower than those generated by existing traffic movements on the local road network. The noise environments at the nearest noise sensitive locations to the proposed works are and will continue to be dominated by road traffic noise.

Noise from construction of the Permitted Development, Proposed Development and Indicative Masterplan Development and other permitted developments within the wider area, whilst potentially significant at locations in close proximity to these , will effectively be masked by the existing traffic noise at the nearest noise sensitive locations identified in this assessment. Such works would not be expected to increase ambient noise levels in the vicinity of the noise sensitive locations that are in the proximity of the works under consideration here. All sites will be expected to work within conditioned and or best practice noise and vibration limits (as presented in Chapter 10 of this EIA Report) such that the associated noise and vibration impacts are managed. Based on this it is reiterated that any construction noise impacts will be ***slight, negative*** and ***temporary*** in nature.

Once the mitigation measures outlined in Chapter 10 are implemented there will be no significant cumulative impact as a result of the Proposed Development.

The cumulative noise impacts of the Proposed Development, the Permitted Development and Indicative Masterplan Development have been assessed by modelling. The resultant cumulative noise impact is concluded ***negative***, ***not significant*** and ***long-term***.

There are no operational vibration impacts associated with the Proposed Development the Permitted Development or the Indicative Masterplan Development. Any

development with vibration impacts will be required to comply with guidance levels as a condition of planning hence cumulative impacts do not arise in this instance.

16.8 LANDSCAPE AND VISUAL

The assessment of cumulative effects in terms of landscape and visual impact has considered the Proposed Development, in combination with:

- Proposed, permitted and planned developments in the area, including in particular the Permitted Development and future Indicative Masterplan Development (comprising two further data storage facilities).

The Proposed Development is located within the site area of the Permitted Development, and will occupy the north western corner of the overall site where there is substantial established perimeter woodland screening along the northern and western sides, and the southern and eastern sides face directly into the wider development side. The scale and massing of the Proposed Development is modest relative to the Permitted Development, such that the Proposed Development will only give rise to a modest intensification, if any, of the landscape and visual effects, both during construction and in operation. It is noted that construction of the Proposed Development will take place within the overall construction programme for the wider Permitted Development and will not there extend the overall construction period.

Cumulative effects, in combination with the Permitted Development, will be ***not significant***.

Cumulative effects, in combination with the Indicative Masterplan Development will be greater, however, this increase will be attributable to the future Indicative Masterplan Development rather than the Proposed Development by virtue of the relative scale of the Masterplan development.

The Proposed Development is located on lands at the outskirts of Drogheda town, adjacent to the M1 motorway, and within the immediate context of a partially established Business and Technology Park and the Drogheda Retail Park. The site, as existing, has substantial woodland screening along its southern, western and northern sides, and, to the east of the site, there are undeveloped sites within the Business and Technology Park that provide a separation between the site and the nearby residential developments.

The wider context, to the west, north and south, is of rolling agricultural lands, and includes the River Boyne. The Boyne Valley is a landscape of high quality and high sensitivity by virtue of its natural landscape, the megalithic passage tombs of Newgrange, Knowth and Dowth, and the cultural heritage of the Battle of the Boyne at Oldbridge. These important areas are screened from the site by the intervening ridgeline at Red Mountain and Donore Hill.

Cumulative effects during construction will extend the overall duration of construction activity within the area. The Indicative Future Masterplan Development is somewhat closer to some residential receptors, giving rise to moderate and negative cumulative landscape and visual effects. In the wider landscape, the cumulative construction and development area will render the development site more prominent in the landscape, and cumulative landscape and visual effects, where the site area is visible, will generally be moderate and negative. Importantly, cumulative developments will not be

visible from the area of the passage tombs at Brú na Bóinne or from the Battle of the Boyne at Oldbridge.

Cumulative effects during operation will intensify the high-tech and industrial character of the south western Drogheda environs, which also includes the Drogheda Retail Park, introducing substantial additional built elements that will be visible to a greater or lesser extent from local and wider vantage points. Locally, and where visible, cumulative effects are likely to be perceived as moderate and negative, however, these will become more neutral as developments become established and operational. In the wider landscape, cumulative effects, where visible, will vary depending on the relative elevation of the vantage points. From higher vantage points, the buildings will be seen in the distance against a backdrop of landscape and other buildings, whereas, from lower elevations, the buildings will present on the skyline. Cumulative landscape and visual effects will generally be moderate and negative. Cumulative developments will not be visible from the area of the passage tombs at Brú na Bóinne or from the Battle of the Boyne at Oldbridge.

Cumulative landscape and visual effects are illustrated in the series of Accurate Visual Representations included in Appendix 12.1 for each of the representative views described above. Cumulative effects are illustrated in the fourth version of each view and show the Proposed Development in combination with the Permitted Development and future Indicative Masterplan Development of two further data storage facilities. These developments (referred to as cumulative developments) are shown outline only, with the Permitted Development, Proposed Development, and indicative future Masterplan Development outlined in green, red and yellow respectively.

Figures 1.1.4 and 1.2.4 include the profiles of cumulative developments in outline format. These developments are substantially screened by the motorway landscaping. Cumulative landscape and visual effects are ***not significant*** and ***neutral***.

Figure 1.3.4 includes the profiles of cumulative developments in outline format and indicates these will be prominent on the skyline beyond the houses, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.4.3 includes the profiles of cumulative developments in outline format and indicates these will be prominent on the skyline beyond the houses, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.5.4 includes the profiles of cumulative developments in outline format and indicates these will also be screened by the established boundary landscaping, and cumulative landscape and visual effects will be ***not significant*** and ***neutral***.

Figure 1.6.4 includes the profiles of cumulative developments in outline format and indicates these will be partially visible beyond the Permitted Development and the main avenue landscaping, giving rise to cumulative landscape and visual effects are ***slight/moderate*** and ***negative***.

Figure 1.7.4 includes the profiles of cumulative developments in outline format and indicates these will be screened by the Proposed Development, with no additional landscape and visual effects.

Figure 1.8.3 includes the profiles of cumulative developments in outline format and shows the upper parts of the southern elevations being visible beyond the motorway landscaping. It is noted that this view location is not sensitive, and the nature of the view in momentary, and as such, cumulative landscape and visual effects are ***not significant*** and ***negative***.

Figure 1.9.4 includes the profiles of cumulative developments in outline format and indicate an intensification of development at the outskirts of Drogheda, giving rise to cumulative landscape and visual effects that are ***moderate*** and ***negative***.

Figure 1.10.4 includes the profiles of cumulative developments in outline format and indicates these will become visible behind the landscaping of the northern site boundary and against the skyline, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.11.4 includes the profiles of cumulative developments in outline format and indicates an intensification of development in the distance and against the skyline, giving rise to cumulative landscape and visual effects are ***moderate/significant*** and ***negative***.

Figure 1.12.4 includes the profiles of cumulative developments in outline format, and indicates an intensification of development in the distance, but substantially below the skyline and against a backdrop of landscape and built elements, giving rise to cumulative landscape and visual effects are ***moderate*** and ***negative***.

Figure 1.13.4, 1.14.4 and 1.15.4 include an outline of the cumulative developments and illustrate that these developments would be fully screened from these viewpoints and with ***no cumulative landscape and visual effects***.

16.9 ARCHAEOLOGY

Chapter 11 considers the cumulative impact of the Proposed Development with other developments (including the Permitted Development and future Indicative Masterplan Development of two further data storage facilities.). As stated in Section 11.8 of Chapter 11, subject to the implementation of appropriate archaeological mitigation measures, no residual impacts on archaeological, architectural and cultural heritage are predicted.

An assessment of the potential for cumulative effects on archaeological, architectural and cultural heritage to arise as result of other developments in the vicinity was undertaken by considering the existing and permitted projects in the vicinity of the Proposed Development (Refer to Appendix 3.1, 3.2 and 3.3 of Chapter 3) and the Permitted Development and future Indicative Masterplan Development of two further data storage facilities.. Where appropriate these developments were subject to archaeological, architectural and cultural heritage impact assessment as part of the environmental impact assessment or planning processes. With mitigation measures outlined in these impact assessments, no cumulative impact on archaeological, architectural or cultural heritage will occur.

16.10 TRAFFIC AND TRANSPORTATION

During operation there are a low number of vehicles trips associated with the Proposed Development. Based on the traffic generation and distribution discussed in chapter 13, the cumulative impact of all local permitted developments (including the Permitted Development and future Indicative Masterplan Development of two further data storage facilities) and the Proposed Development has been estimated. A cumulative traffic impact has been obtained taking into consideration the Proposed Development, the Permitted Development all committed development in the local area, and the future Indicative Masterplan Development (indicative Masterplan. The traffic flows obtained from the background forecast presented in Table 13.8, have been used a base to determine cumulative traffic impacts of all developments during the operational phase.

Base on the timelines outlined in Chapter 13, sections 13.14 and 13.15, the Permitted Development and all committed development in the local area will be operational by 2023. Therefore, the traffic associated with these have been added to both assessment years (2023 and 2038). On the other hand, the traffic associated with the Indicative Masterplan Development will not be generated until a further date i.e. 2026 and 2029. Due to this, the traffic generation for this development has been added only to the horizon year i.e. 2038. The total traffic percentage increase at relevant junctions, is presented in Table13.14, below:

Junction No.	Time Period	Total Junction Traffic Movements (PCUs)	
		YoO 2023	YoO+15 2038
J1	AM Peak	2.72%	12.41%
	PM Peak	1.36%	8.64%
J2	AM Peak	2.30%	11.70%
	PM Peak	1.27%	7.01%
J3	AM Peak	10.84%	54.89%
	PM Peak	6.26%	34.96%

Table 13.14: Proportional Traffic Increase at Relevant junctions with all Developments in Place

With the Proposed Development in place, the 2023 traffic flows through junction no. 3 shall increase by up to 10.84% in the AM and 6.26% in the PM. Due to the large scale of the future Indicative Masterplan Development in the lands to the north, a higher proportional increase is expected for 2038 during both assessment periods. As noted in Chapter 13, during the worst case scenario the Proposed Development will only add 2 no. vehicles to the network, which represents a small fraction of the traffic estimated for future years with all other committed and indicative future developments in place. Therefore, the proportional traffic increase associated with the Proposed Development is minimal.

This demonstrates that the traffic impact in the operational phase of the Proposed Development is ***long-term***, ***neutral*** and ***imperceptible***. The proportional traffic increase through the relevant junctions with the proposed 110kV GIS substation are significantly below the thresholds stated in the *TII Guidelines for Traffic and Transport Assessments, 2014* for junction analysis.

As noted construction activities for the Proposed Development will take place between Q2 2021 and Q2 2022. During this period, the construction of the Permitted Development will still be ongoing. Construction of the Permitted Development commenced in Q3 of 2020 and will be finished in 2023 and will overlap with the construction of the Proposed Development.

The construction of the Indicative Masterplan Development is expected to begin during 2023. At this time, the construction of the Proposed Development and the Permitted Development will be already finalised. Therefore, the construction activities associated with the Indicative Masterplan Development will not overlap with the construction of the Proposed Development

In light of the timelines presented above, the potential impacts of the Proposed Development during the construction phase have been estimated taking into consideration the construction traffic associated with the Permitted Development under *MCC Reg. Ref: LB/191735* (Building 1) only.

As noted during the construction peak period the Proposed Development shall generate up to 20 no. HGV movements per day, of which 4 no. movements shall occurred during each peak period i.e. 4 no. in AM peak and 4 no. PM peak (including arrival and departure). In addition to that, 60 no. LV one-way trips associated with staff commuting patterns shall access the site throughout the day, of which, 15 no. trips are expected during the AM and 15 no. trips are expected during the PM peak. These figures have been added to the construction traffic associated with the Permitted Development (Building 1) to obtain impact in the road network in the vicinity of the site. Table 13.12 below sets out the proportional traffic increase through the network at the peak of construction activities, comparing the traffic impacts 'with the Permitted Development only' to the traffic impact 'with the Proposed Development included'.

Junction No.	Construction Phase with Permitted Development Only				Construction Phase with Permitted and Proposed Developments			
	AM Peak	Percentage Increase	PM Peak	% Increase	AM Peak	Percentage Increase	PM Peak	% Increase
J1	16	2.36%	21	2.04%	19	2.75%	25	2.39%
J2	36	2.30%	36	1.70%	42	2.69%	42	1.98%
J3	144	10.67%	144	8.34%	168	12.46%	168	9.75%

Table 13.12: Proportional Traffic Increase at Relevant Junctions During the Construction Phase.

The impacts of the traffic associated with the construction of proposed GIS substation are minimum. When comparing both scenarios, an increase is seen at junction no. 3 from 10.67% to 12.46%. This traffic increase has been estimated in relation to existing traffic conditions. The remaining junctions on the network shall also experience a slight increase, however this is expected to be **not significant** and **short-term**.

Given the **short-term** nature of the peak construction phase, the overall impact of the construction phase involving the developments is considered **not significant** and shall not affect the performance of the junctions under study.

16.11 MATERIAL ASSETS

The Proposed Development entails minimal use of material assets during construction. Once operational, the Proposed Development will result in minimal impact on surface water, foul drainage and water infrastructure. The Proposed Development will connect to the surface water, foul drainage and water supply infrastructure for the Permitted Development and the requirements for the Proposed Development has already been considered in terms of the design of the infrastructure for the Permitted Development.

The Applicant has previously engaged with IW to ensure that there is sufficient capacity to cater for the water supply and wastewater for the Proposed Development, the Permitted Development and future Indicative Masterplan Development. As noted in this chapter and the *Engineering Planning Report – Drainage and Water Services* prepared by CSEA (and included as part of the Proposed Development planning submission), a PCE form was submitted to IW which addressed water and wastewater demand for the these developments. IW provided a CoF for the development on 5th November 2019 (IW Reference Number: CDS19007702) which confirms that a foul water and water supply connection to IW is feasible.

The Proposed Development will have a negligible demand on power and the Permitted Development will have a maximum operational electrical demand of 58.2MW, with an overall maximum operational demand for the Indicative Masterplan Development of c. 174.6MW (based on 58.2MW per building). As stated in Section 14.7.2, Eirgrid's All-Island Generation Capacity Statement 2020-2029 sets out that Eirgrid has the capacity to provide for such developments.

Based on this, it is predicted that the cumulative impact of the Proposed Development with other permitted and planned developments is considered to be **imperceptible** during the construction and operational phases.

16.12 WASTE MANAGEMENT

The construction of the Proposed Development and the Permitted Development within the overall landholding will require site clearance, excavations and levelling which will generate waste. Mitigation measures as outlined in Chapter 15 will be implemented for the Proposed Development, and provided that mitigation measures set out in the EIA Reports for all developments are implemented during construction of the Proposed Development, the cumulative impact will be *short term* and *imperceptible*.

The waste quantities to be generated from the operation of the Proposed Development, Permitted Development and Indicative Masterplan Development are anticipated to be relatively as discussed in Chapter 15 of this EIA Report and in the EIA Report for the permitted development. As such, the predicted impact of the build out of the site on waste management will be *long term* and *imperceptible*.

All developments will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative impact will be ***long-term*** and ***imperceptible*.**

17.0 INTERACTIONS

17.1 INTRODUCTION

This chapter of the EIA Report addresses potential interactions and inter-relationships between the environmental factors discussed in the preceding chapters. This covers both the construction and operational phase of the Proposed Development.

In the main, the majority of EIA Report chapters have already included and described assessments of potential interactions between aspects however this section of the assessment presents a summary and assessment of the identified interactions.

These interactions have been identified and considered by the various specialists contributing to this impact assessment.

17.2 DISCUSSION – POSITIVE IMPACTS

The reasoning behind the interactions that are considered to have a positive effect (i.e. a change which improves the quality of the environment) is outlined in this section.

Planning and Alternatives on:

Population and Human Health
The Proposed Development will be designed to provide a permanent power supply for the Permitted Development and future growth within the overall business park.

The Proposed Development will create between 15-30 temporary jobs during the construction phase, which will have a short term, positive, imperceptible effect on employment and business in the Drogheda area.

17.3 DISCUSSION – NEUTRAL IMPACTS

The reasoning behind the interactions that are considered to have a neutral effect (i.e. no effects or effects that are imperceptible, within the normal bounds of variation or within the margin of forecasting error) is outlined in this section.

Land, Soils, Geology and Hydrogeology on:

Population and Human Health
There will be a loss of soil and land previously used for agriculture due to the Proposed Development. However, as the lands are already zoned for development there is no overall loss of agricultural land use. In addition, the employment created by the construction and operation of the Proposed Development counterbalances this economic loss to some extent and so the impact is ***long-term, imperceptible*** and ***neutral***.

Hydrology
The main potential impact of the construction works proposed is on surface water quality (due to sediment laden run-off, material spillages) and groundwater quality (due to removal of protective soil for construction of the GIS substation); however there is no direct pathway to a river/stream and the implementation of a CEMP as detailed in

Chapter 7 will ensure the effect on receiving waters will be ***short-term, imperceptible*** and ***neutral***.

Biodiversity
The surrounding area has been extensively developed and the majority of its natural flora and fauna has been removed/displaced. Notwithstanding the loss of soil environment during construction, vegetation and additional planting will maintain habitat for flora and fauna resulting in will ensure a ***short term, imperceptible*** and ***neutral*** effect.

Air Quality and Climate
There is a potential for the construction activity to impact on air quality in terms of dust generated but mitigation measures outlined in Chapter 9 (Air Quality & Climate) of this EIA Report, implemented through the CEMP will ensure a ***short term, imperceptible*** and ***neutral*** effect. There is no predicted perceptible impact during operation.

Waste Management
As detailed in Chapter 15 (Waste Management), c. 17,000m^3 of excavated material may be generated during construction. The majority of the excavated material will need to be removed off-site either as a waste or, where appropriate, as a by-product. The management of waste during the construction phase in accordance with the Construction & Demolition Waste Management Plan (C&D WMP) will meet the requirements of regional and national waste legislation and promote the management of waste in line with the priorities of the waste hierarchy. Therefore, the effect of generation of soils/stones in terms of waste management will be ***neutral***.

Hydrology on:

Population and Human Health
Once operational, the Proposed Development will generate minimal wastewater emissions (foul water) from the GIS substation welfare facilities. This will discharge via the IDA sewer network to the Local Authority wastewater treatment plant (WWTP) at Drogheda. As treated wastewater discharges from the WWTP to the Boyne Estuary, which is a public amenity, there is a potential for impact on the human beings using this amenity. However, the Drogheda WWTP will provide treatment for wastewater emissions, the effect is considered to be ***long-term, imperceptible*** and ***neutral***.

Biodiversity
There is no direct pathway to a river. Surface water will be discharged offsite to the IDA surface water drainage network via hydrocarbon interceptors suitably sized attenuation basins and a flow control device ensuring emissions are controlled to greenfield runoff rates.

There is no formal designation on the Proposed Development lands and the development area may be considered of Low Local Ecological Value. The predicted effect will be ***long-term, imperceptible*** and ***neutral***.

Air Quality and Climate on:

Hydrology
There is a pathway to water due to deposition of dust during construction. Mitigation measures implemented during the construction phase will ensure that the deposition of dust is minimised and therefore the predicted effect from air (including dust) on the water environment during construction is ***short-term, imperceptible*** and ***neutral***.

Biodiversity
There is a pathway to ecology due to deposition of dust during construction. Mitigation measures during the construction phase of the Proposed Development will ensure that dust generation is minimised and the effect on biodiversity will be ***short term***, ***imperceptible*** and ***neutral***.

Population and Human Health
There is a pathway to human receptors due to deposition of dust during construction. The mitigation measures that will be put in place at the Proposed Development for the construction phase will ensure that the impact of construction dust emissions in the form of nuisance dust are ***short-term*** and ***imperceptible***. Further detail on human health and air quality is presented in Chapter 5.

Noise and Vibration on:

Population and Human Health
There is a potential impact to human receptors due construction noise and vibration. The mitigation measures that will be put in place at the Proposed Development for the construction phase will ensure that the impact of construction noise and vibration emissions are ***slight, negative*** and ***temporary***.

The mitigation measures that will be put in place at the Proposed Development for the operational phase will ensure that the impact of construction noise and vibration emissions are ***negative***, ***not significant*** and ***long-term***.

Landscape and Visual on:

Population and Human Health
The predicted impact of the Proposed Development on the landscape is described in Chapter 12. The Proposed Development is well-sited and includes architectural and existing landscape that will ensure the development is integrated into its setting, including the use of existing landscaped berms which will provide visual screening. Residual landscape and visual effects from the wider locality will be ***not significant*** or ***imperceptible***, will be ***long-term***.

Biodiversity
The construction of the Proposed Development will involve the removal of some of the existing landscape. However, this will be replaced by other suitable landscaping treatments and overall will have a ***long-term, imperceptible*** and ***neutral*** impact.

Material Assets on:

Population and Human Health
The Proposed Development will not have a significant impact on material assets such as surface water drainage, water supply, wastewater drainage, power supply and road infrastructure. The individual chapters of this EIA Report (Chapter 13 Traffic and Transportation and Chapter 14 Material Assets) have assessed the capacities of the available infrastructure to accommodate the Proposed Development and the implementation of the mitigation measures proposed will ensure there are no negative impacts on the local population. The predicted effect is therefore ***imperceptible*** and ***neutral***.

Hydrology
The Proposed Development will result in minor changes to surface water drainage, water supply and wastewater networks. However, a combination of mitigation measures to be implemented as part of the permitted datacentre development as detailed in Chapter 7 (Hydrology), as well as the capacity already built into these networks, will ensure that these changes will result in a ***long-term, imperceptible*** and ***neutral*** impact.

17.4 DISCUSSION – NEGATIVE IMPACTS

The reasoning behind the interactions that are considered to have a negative effect (i.e. a change which reduces the quality of the environment) is outlined in this section.

Noise on:

Biodiversity
Noise generated during the construction phase of the Proposed Development will have a short-term negative impact on fauna which are likely to be displaced during construction works. As the majority of the area is already partially developed in nature the overall operational noise levels will not change significantly.

Land, Soils, Geology and Hydrogeology on:

Noise and Vibration
Impacts associated with excavation works will be transient in nature and have a short-term impact on the noise environment, which will be mitigated by the implementation of the CEMP, in particular during any rock breaking works. The effect will be ***slight, negative temporary*** and ***short term.***

17.5 SUMMARY

In summary, the interactions between the environmental factors and impacts discussed in this EIA Report have been assessed and the majority of interactions are ***neutral***.