

Project Runways Expansion

Environmental Impact Assessment Report
Volume 1: Non-Technical Summary - Data Centre

Runways Information Services Limited

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Prepared for:

Runways Information Services Limited

Prepared by:

AECOM Ireland Limited
4th Floor
Adelphi Plaza
George's Street Upper
Dún Laoghaire
Co. Dublin A96 T927
Ireland

T: +353 1 238 3100
aecom.com

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Non-Technical Summary - Data Centre

This is a summary in non-technical language of the Environmental Impact Assessment Report (EIAR). It is presented under the same chapter headings as the main EIAR. A separate Non-Technical Summary (NTS) has been prepared for the proposed Substation development, with an assessment of any interacting impacts ("cumulative assessment") included in the relevant section of this NTS. A summary of proposed mitigation measures contained within the EIAR is appended to this document.

1. Introduction

Runways Information Services Limited (RISL, the Applicant) is proposing to develop a single story data centre on a circa 108 hectare (Ha) greenfield site in the townlands of Gunnocks, Portan, Loughsallagh and Clonee, County Meath (the Proposed Development site). The data centre is proposed to be an expansion of the Applicant's existing data centre campus directly to the east and would add two additional data centre buildings to the existing campus which has three buildings developed or under construction. The existing site and the proposed site would ultimately function as one data centre campus for RISL. The new facilities will be similar in function, layout, and scale as what is on the existing campus (e.g., buildings, roads, entrances, boundary treatments). The supply of energy for the expansion will be facilitated by connection to the national grid.

It is the goal of the Applicant to source electricity for its operations from 100% clean and renewable energy sources in Ireland. The Applicant currently operates highly efficient and sustainable data centres. The Applicant's goals for sustainable development in design, construction, and operations would continue to apply to the entire expanded campus. Information relating to present operations and sustainability reporting may be found at https://sustainability.fb.com including goals for Leadership in Energy and Environmental Design (LEED) certification of the design and construction, water use efficiency, and goals related to renewable energy use.

The Proposed Development will consist of two single-storey data centre buildings connected by a centralised single-story administration building and associated infrastructure (the proposed Data Centre development) and a new 220 kilovolt (kV) substation, underground transmission cables and associated infrastructure (the proposed Substation development). See Figure NTS 1.1 for the Proposed Development site layout.

The expansion would add two additional data centre buildings (referred to as CLN 5/6 buildings) to the existing campus which has three buildings developed or under construction (referred to as CLN 1-3 buildings). The Applicant has a global naming convention for buildings on its data centre campuses. The function performed by 'Building 4' in this system is not currently required at the Clonee site and as such, no building CLN4 is proposed.

Figure NTS 1.2 presents the layout for the proposed extended campus, including the Proposed Development and the existing adjacent data centre campus.

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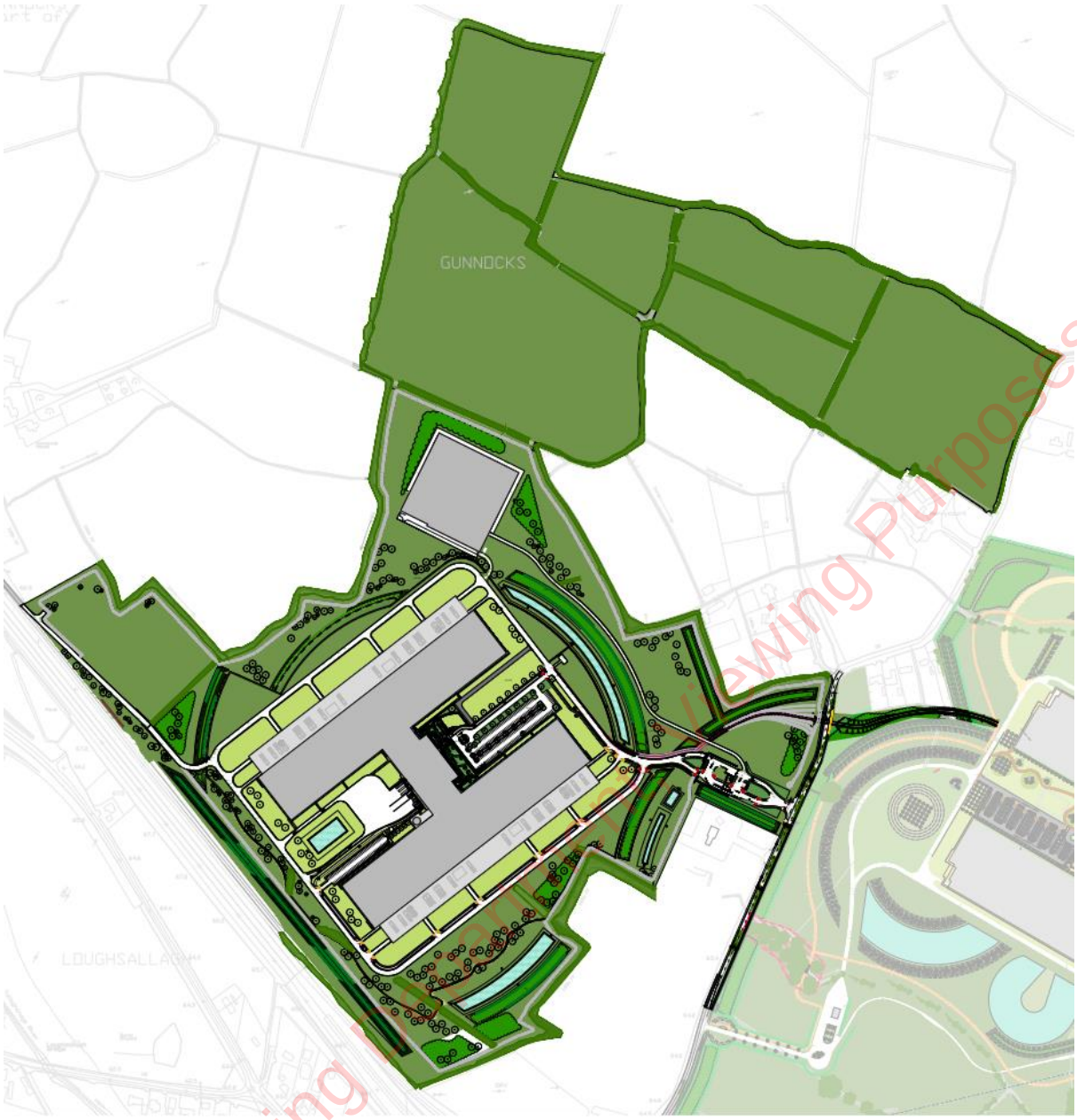


Figure NTS 1.1: Proposed Development Site Layout

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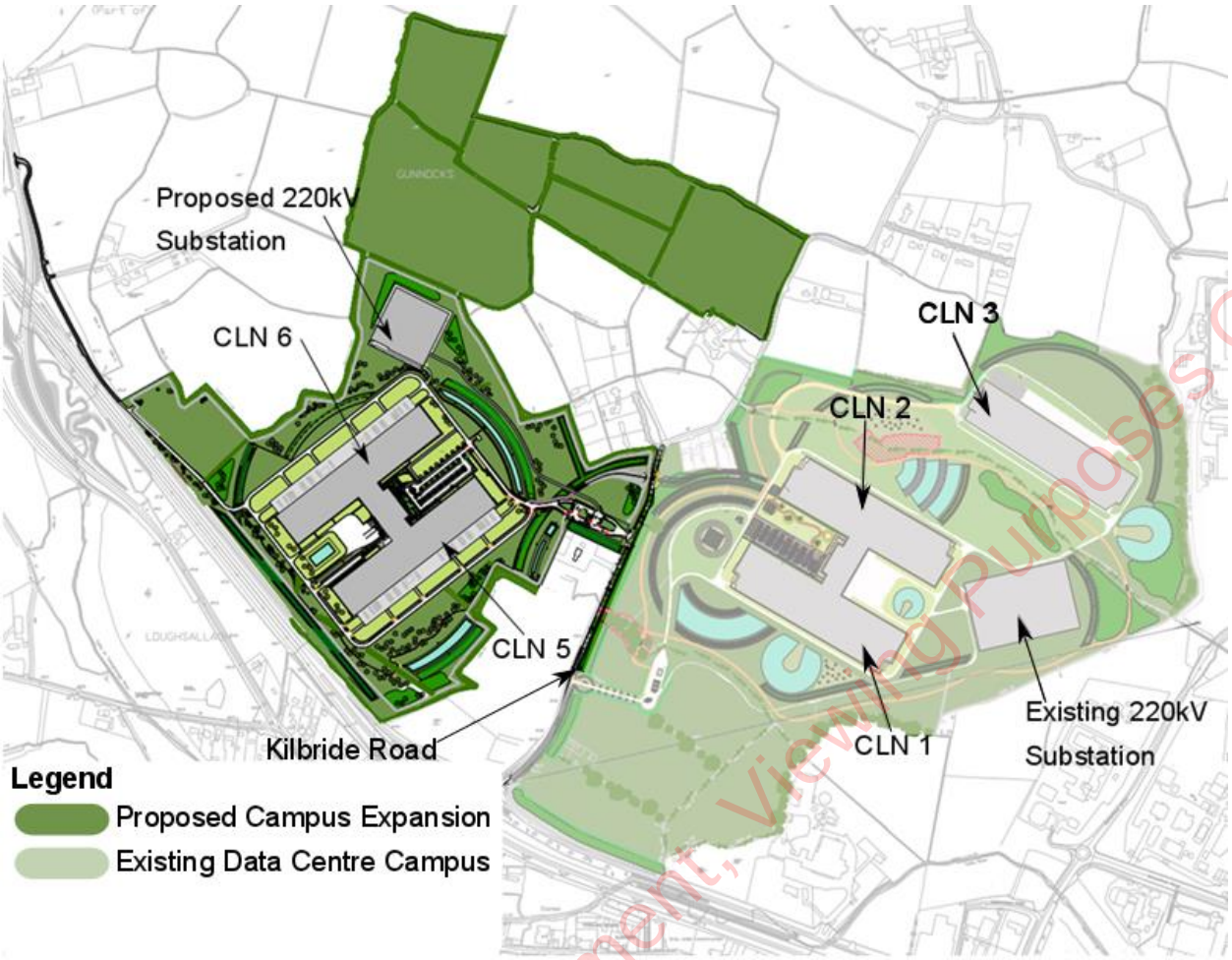


Figure NTS 1.2: Proposed & Existing Data Centre Campus

For the purposes of planning, an application will be made to Meath County Council (MCC) for the Data Centre development. The Substation development constitutes Strategic Infrastructure Development (SID) and a planning application will be submitted to An Bord Pleanála (ABP) for this portion of the Proposed Development. Both developments are assessed in the EIAR. The proposed Data Centre and Substation planning application boundaries are presented in Figures NTS 1.3 and 1.4 respectively.

The proposed Data Centre development site is within County Meath on land which is zone E2 (General Industry and Employment Category 1) and zone E3 (Warehousing and Distribution) within the Dunboyne Clonee Pace Local Area Plan 2009-2015, as amended by Variation No. 2 to the Meath County Development Plan (May 2014).

The Data Centre development site is surrounded by a mixture of agricultural land, the existing data centre campus and rural housing. To the north there is predominantly agricultural land with some residential properties. To the south is the M3 Motorway and Clonee village further south. To the east there is the existing data centre campus. To the west there is predominantly agricultural land with individual residential dwellings located beyond the western site boundary.

Minor and regional public roads are found surrounding the area, with scattered dwellings located on the minor road. The nearest residential dwelling is located adjacent to local road L5028 Kilbride on the eastern boundary of the site.

The EIAR has been prepared in accordance with the requirements of European Communities (EC) Directives and Irish Regulations regarding Environmental Impact Assessment (EIA) (Amendment) Regulations, 1999, EIA Directive 2014/52/EU, "*Guidelines on the Information to be contained in Environmental Impact Statements*" (Environmental Protection Agency (EPA), 2002), the "*Advice Notes on Current Practice in the Preparation of Environmental Impact Statements*" (EPA, 2003), the "*Guidelines on the information to be contained in Environmental Impact Assessment Reports*" (EPA Draft August 2017) and "*Environmental Impact Assessment of Projects, Guidance on the preparation of the Environmental Impact Assessment Report*" (European Commission, 2017).

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MCC were consulted prior to the commencement of the assessment in relation to the scope of the EIAR. The CLN5-6 generators will be subject to Medium Combustion Plant registration with the EPA, and the existing Greenhouse Gas Permit for the existing data centre campus will be amended to include the CLN 5-6 buildings. Consultation with the Health and Safety Authority has indicated that the Proposed Development will be a Lower Tier Seveso Site when considered cumulatively with the existing adjacent data centre campus. It has been concluded that there is no likely significant impact associated with the potential for major accidents and / or natural disasters outside of those covered by the Seveso regulations. A Wastewater Discharge Licence will also be obtained from Irish Water for the Proposed Development.

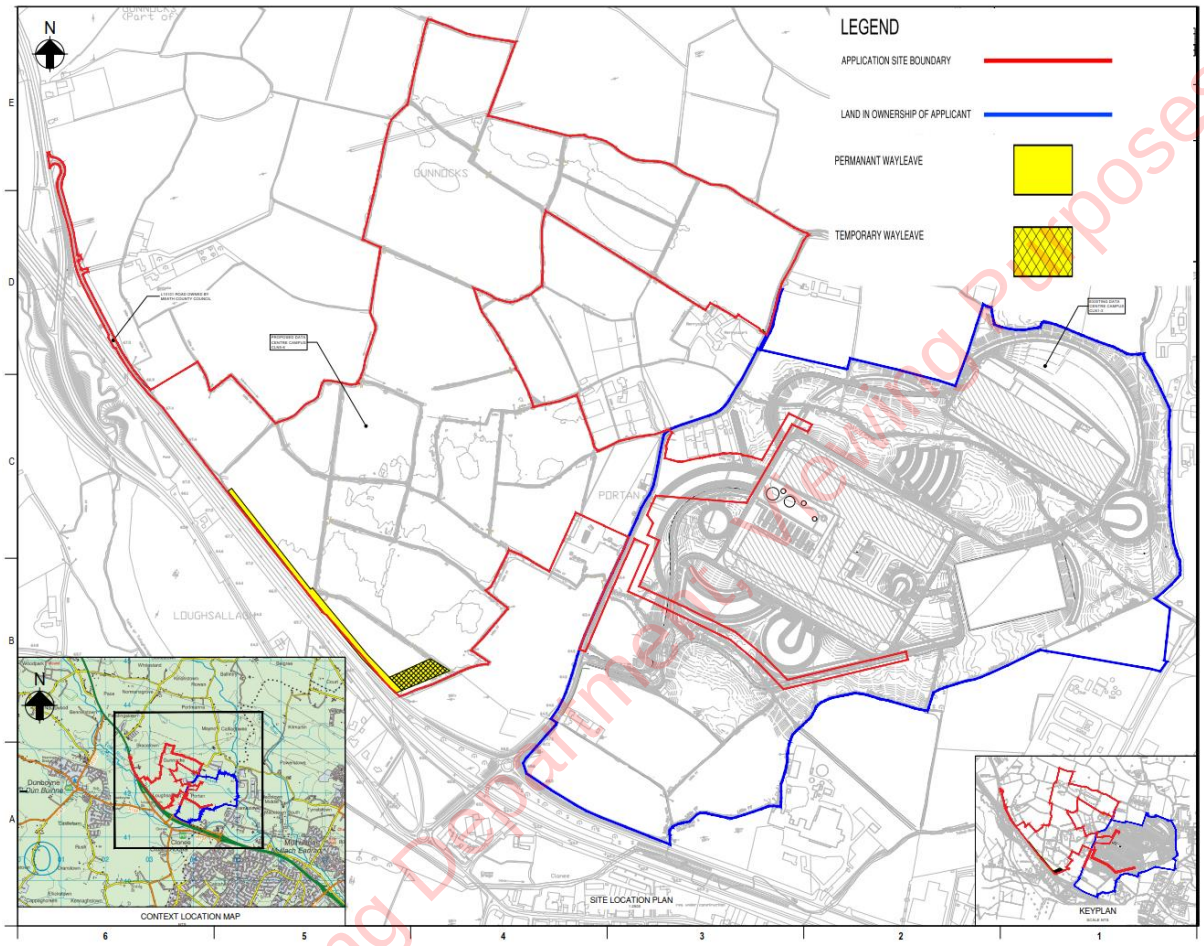


Figure NTS 1.3: Proposed Data Centre Development Planning Application Boundary

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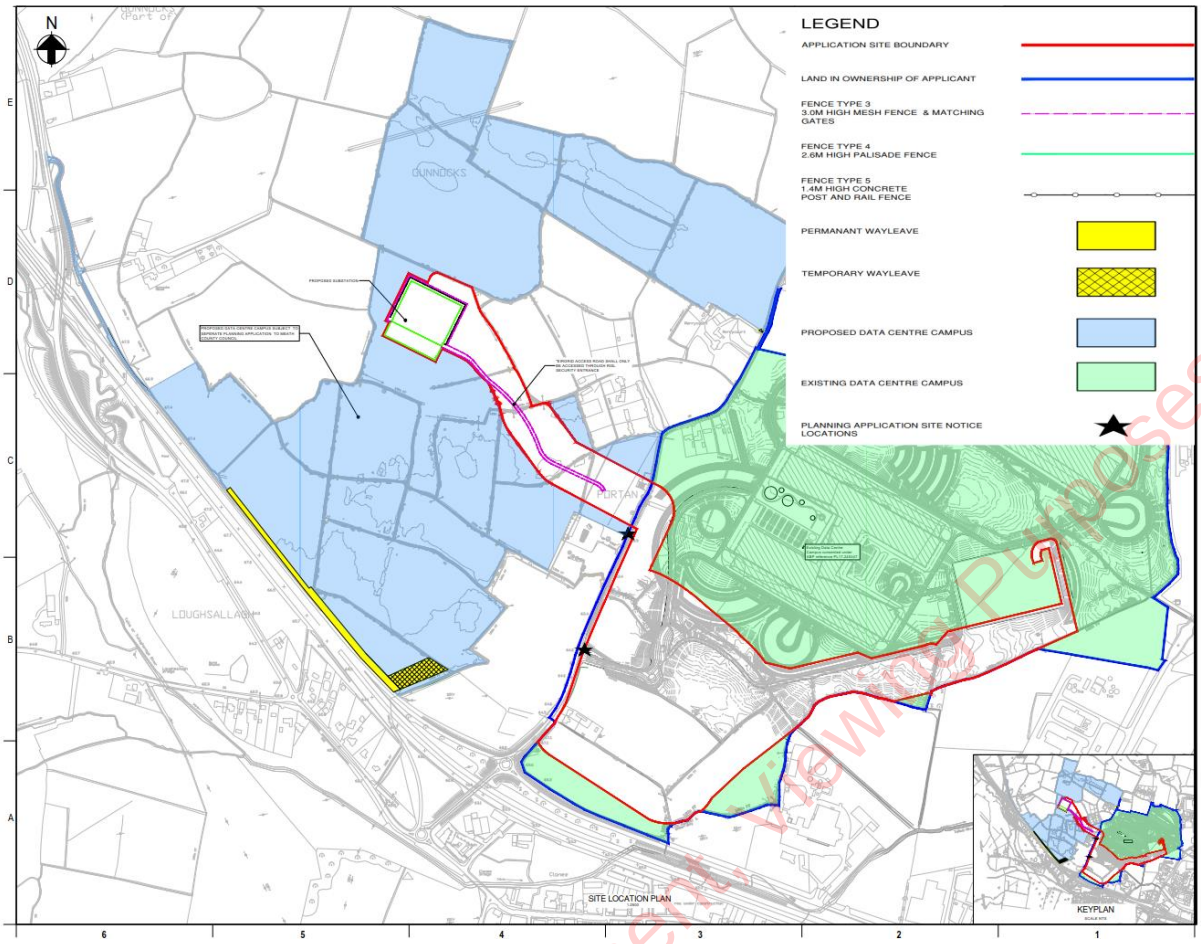


Figure NTS 1.4: Proposed Substation Application Boundary

2. Project Description

The proposed Data Centre development will serve as an expansion of the existing adjacent data centre campus located to the east of the site. The new facilities will be similar in function, layout, and scale as that which is on the existing campus (e.g., buildings, roads, entrances, boundary treatments).

Each of the data centre buildings will house computer servers hosting data and are operated for the purpose of managing and distributing electronic data. Each data centre building will also include supporting mechanical (e.g., for cooling) and electrical rooms as well as systems for emergency operation. The administration building connecting the two data centre buildings will include maintenance, planning, and server management activities and include office and amenity spaces for full and part-time employees.

The facility will also have a security guardhouse at the proposed site entrance. A 3m perimeter fence will surround the Proposed Development. An internal road network will serve as access and egress for all site buildings. Outdoor lighting will be distributed around the Proposed Development to meet site functional, security and aesthetic lighting requirements and has been designed to minimise the potential for light spill outside the site.

Landscape features will include areas for employee leisure and recreation, as well as ecological restoration (such as planting of native species), and surface water management. Landscape elements will include regional materials where practicable to reinforce and enhance the existing natural systems. The landscape features have been designed to complement the landscape motif on the existing adjacent data centre campus.

The principal site access will be located to the east of the site, off the Kilbride Road (L5028) and will be north of the entrance to the adjacent data centre campus. An emergency access road will also be located off local road L10101 on the western portion of the Proposed Development site.

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An interconnecting underpass is proposed beneath the Kilbride Road (L5028) between the Proposed Development site and the existing adjacent data centre campus to facilitate staff travel within the expanded campus.

A new 220kV substation (including associated works) connected to the existing substation on the adjacent data centre campus to the east will also form part of the Proposed Development (subject of a separate SID application to ABP).

Power will be derived through a connection with the existing 220kV substation on the adjacent data centre campus to the east via the proposed Substation. Water supply will be via two proposed connections to existing water mains present on the eastern and southern site boundaries. The highest point of any building in the Data Centre development will be at circa 15.9 m above ground.

The construction phase of the Data Centre development will last for circa 36 months. Average construction staffing is expected to be at 700-800 persons with a peak at approximately 1,400 persons.

The site will be served by a storm water drainage system designed to Sustainable Drainage Systems (SuDS) requirements. The rate of runoff from the Data Centre development site will be limited as stipulated in criterion 4 of the Sustainable Drainage Guidance for Ireland.

A foul drainage system will be constructed on the site which will be connected via pumping station to the 9C sewer to the south of the site on the R147 regional road (formerly the R156).

In the operational stage, it is anticipated that there will be approximately 155 people working on the site within various functional requirements of the Applicant.

3. Planning and Development Context

Clonee is a village in County Meath that is located on the outskirts of Dublin near Dunboyne town. Both Clonee and Dunboyne are situated on the M3 transport corridor that connects Dublin City with Navan, Cavan and Donegal.

Under the Regional Planning Guidelines for the Greater Dublin Area (RPGGDA), both Clonee and Dunboyne are located within the Dublin Metropolitan Area, wherein Dunboyne is recognised as a Large Growth Town II that is "*located strategically on the edge of the Gateway Core in an area with a high FDI presence.*"

Clonee and Dunboyne are recognised in the Meath County Development Plan 2013-2019 as a grouped settlement entity on the M3 multimodal transport corridor radiating from Dublin City. As such, they are worthy of the preparation of their own Local Area Plan, known as the Dunboyne Clonee Pace Local Area Plan 2009-2015.

The appeal of this area for investment is increasing due to its close commuting distance to Dublin and because of ongoing improvements to the road and rail network. Accordingly, MCC has zoned an appreciable amount of land at Portan, Clonee for economic development because of its high accessibility to the M3 and proximity to the existing Damastown Industrial Park. This application for economic investment and expansion of an existing data centre campus is submitted in response to this statutory zoning objective of the Council.

Specifically, the site is zoned for general enterprise and employment use, as well as warehousing and distribution. The data centre campus expansion proposed in this planning application fits neatly within these land use zonings.

The Data Centre expansion will create high quality jobs on appropriately zoned land within the Greater Dublin Area and should be welcomed as an important investment in County Meath.

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4. Examination of Alternatives

A critical requirement of the EIAR process is the consideration and presentation of various alternatives to the key project decisions in the context of environmental impact. EIA guidance and legislation requires that consideration of these alternatives should include, where relevant: sites, routes, alignments/layouts, processes, technology, size, scale and strategies.

To satisfy this requirement the proposal contained in this planning application addressed the following key project decisions:

- Why build this facility;
- Alternative locations;
- Alternative designs/layouts; and
- Alternative processes.

Why Build this Facility?

As the Applicant's business grows, so too does the volume of data. This growth has continued through the period of time since the adjacent existing data centre campus was conceived. The development of this data centre will provide the servers needed to manage the data serving that growth, deliver content when requested, and allow quick and efficient communication between customers. If this development were not to proceed, then the Applicant would not be able to efficiently meet the anticipated requirements of its growing customer base.

Alternative Locations

The Applicant evaluated a number of options before concluding that the best option was to expand its existing facility to adjacent lands so that all facilities could be connected into one campus with shared infrastructure and resources. In terms of preferred location, the Data Centre development site was subsequently chosen due to its location adjacent to the existing data centre campus and its location within appropriately zoned lands E2 (General Industry and Employment Category 1) and E3 (Warehousing and Distribution). Other development lands adjacent to the existing Data Centre were not appropriately zoned and thus deemed unsuitable for the Proposed Development.

After selecting the site, the Applicant conducted a comparative assessment of numerous designs, layouts, and processes with a view to establishing the most appropriate concept for the Proposed Development.

Alternative Designs/Layouts

The selection of the preferred layout and process was made based on the nature of this facility, and minimising the environmental impact of infrastructure technology.

The arrangement of the buildings was designed to make best use of the site, to take into consideration environmental constraints, to optimise the development's energy efficiency with the aim of using heat generated from the servers to heat the office spaces in the interest of sustainability, and to facilitate ease of access to the buildings.

Alternative Process

The Applicant is committed to minimising the environmental impact of infrastructure technology through optimised energy consumption and material efficiency, including use of efficient servers and cooling systems.

5. Population and Human Health

The Population and Human Health chapter of the main EIAR describes the potential impacts of the Data Centre development on Population and Human Health. This has been prepared in accordance with the requirements of the relevant EIA legislation and guidance on preparation and content of EIAR (i.e. the Planning and Development Acts 2000-2017 (and any regulations made thereunder) and the Environmental Impacts Assessment Directive 2011/92/EU and 2014/52/EU) and examines issues including economic activity, social consideration, land use

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and health and safety. Impacts on humans from other issues including air quality, noise, vibration, traffic, soil, hydrogeology and landscape are discussed in separate EIAR chapters.

In addition to the above, impacts on health were assessed in a separate standalone Health Impact Assessment (HIA) completed by AECOM. The aim of the HIA was to understand how the Data Centre development could directly and indirectly impact on the key determinants of health, identifying those people most likely to be affected by the Data Centre development with regard to health inequality issues, and to identify measures to enhance the positive impacts and mitigate the negative effects of the Data Centre development on public health, and establish responsibilities for delivering and monitoring these measures.

According to the most recent Census data the population in the site vicinity has experienced growth above the state average and this highlights the economic role of the area. The employment types of the local population suggest that the area can support a variety of employment, and professional and skilled employees can potentially be drawn from the local area. The proposed construction works are likely to create an increase in demand for temporary accommodation in the vicinity of the site and the surrounding areas, again benefiting the hospitality sector in the local economy.

While the Data Centre development is likely to create some additional demand for housing for employees within the local area, it is anticipated that many potential employees may commute using the good existing infrastructure. The Data Centre development will affect employment in the area creating both direct and indirect employment with a potentially positive impact for local businesses in the area.

The HIA indicated that the communities immediately surrounding the Data Centre development at a sub-regional level are affected by specific health issues. Analysis indicated that the resident population tends to have mixed health with a lower propensity to be affected by long-term health problems than the national average and a good level of general health. The resident population are affected by lower than average levels of deprivation. The HIA assessed the key potential health impacts associated with health determinants including air quality, noise and neighbourhood amenity, accessibility and active travel, crime reduction and community safety, access to work and training and climate change.

The HIA also identified that the Principal health benefits of the Data Centre include:

- Increased job opportunities and improved accessibility to jobs with indirect benefits on mental health and well-being.
- Safety and security of the area and adjacent footways/cycleways increasing opportunities for active travel and physical activity.
- Reduced risk of road accidents due to improvements to the local road network.

The cumulative impacts of the Data Centre development, the Substation development and the existing adjacent data centre campus on population and human health has been considered in relation to a number of plans and projects in the vicinity of the development (including existing developments, permitted developments and developments for which planning has been applied, but not yet granted). The developments comprising the cumulative scenarios include existing large developments in the vicinity of the site such as Damastown Industrial Estate, and those described in Table 5.1a and 5.1b in the chapter.

No significant impacts on human beings and the human environment originating from the Proposed Development were identified.

The long term impact of the Proposed Development in the site vicinity is anticipated to be positive considering the economic and social benefits of the project as a result of employment generated.

6. Land and Soils

Information relating to regional, local and site conditions was assessed, in particular the geotechnical and environmental site investigation (soil and groundwater sampling programme) works carried out at the Proposed Development site. The soil investigation revealed the general ground profile at the site to comprise of topsoil (between 0.2 m-0.3 m in thickness), till comprised of sandy gravelly clay (between 2.65 m-6.0 m in thickness), and bedrock (>9.7 m in thickness, typically fine-grained Limestone). Laboratory results indicated no significant

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contamination risk to surrounding surface waters and groundwater or site users, associated with soil and groundwater at the site.

There will be no direct discharges to groundwater or soil during the construction or operational phase other than a minor portion of surface water from car parking to the north of the Data Centre which will enter the ground via permeable paving. The potential impacts to the soils, geology and hydrogeology from the Data Centre development were assessed. During construction, potential impacts would include excavation and infilling, use of natural resources, accidental spills and leaks, and use of concrete and lime. A number of mitigation measures will be implemented to ensure that there will be no significant adverse impacts to the soils, geology and hydrogeology environment during the construction and operational phases of the Data Centre development.

The cumulative impact of the proposed Data Centre and Substation developments on soil, geology and hydrogeology were considered in relation to a number of proposed and consented developments or those under construction identified adjacent to the site. Taking into account the construction and operational potential impacts and the specified mitigation measures, it is considered that the residual impact of the identified developments on soil, geology and hydrogeology will be slight due to measures inherent to the building design and provided that appropriate mitigation measures are applied.

7. Water

The Water chapter examined how the Data Centre development will interact with the water environment, in particular with natural water bodies, stormwaters, wastewaters and water supplies in the area. Existing published water data and other information regarding natural surface waters, foul sewerage services, stormwater drainage and water supply were reviewed as part of the chapter compilation.

Surface water collected on the site will be discharged via lined attenuation ponds to either the Pace stream or to culverts beneath the M3 motorway. The rate of runoff from the development site will be limited greenfield runoff rates. In order to achieve this, flow control devices will be installed on the outlets from the attenuation ponds.

A Flood Risk Assessment has been undertaken to determine the site flood level and the buildings will be constructed above the flood plain.

Currently there are no foul sewers within the site. The utility provider for acceptance of wastewater is Irish Water. Foul drainage will be collected and discharged to a pumping station to the north of the Data Centre. Irish Water has confirmed that it will accept the wastewater flows from the site, although there is a current hydraulic restriction on the receiving 9C sewer on the R147 road. This will result in the need for the terminal pumping station within the site to have storage volume to store flows in periods of wet weather when the 9C sewer will not be able to receive flows.

Irish Water has confirmed that it currently has a scheme in progress which will upgrade the 9C sewer; this is due to be completed in 2022 and will mean that the hydraulic restriction on the discharge in wet weather will be removed.

Water supply for the site will be provided by Irish Water from a new watermain on the Kilbride Road (L5028) and a watermain currently under construction to the south of the site.

A number of mitigation measures will be implemented to ensure that there will be no impacts to the water environment during the construction and operational phases of the Data Centre development.

In terms of cumulative impacts, the impact of the Data Centre and Substation development has been considered in relation a number of consented developments and developments awaiting decision identified in close proximity to the site.

The cumulative impacts associated with construction are largely related to the spillage and leakage of oils and fuels and disturbance of land and foul drainage. Cumulative impacts from the operation of the developments were considered in relation to increased foul discharge to sewer networks and from surface water drainage from combined developments. However, due to the proposed mitigation measures, the cumulative impacts from both construction and operation are considered to be slight.

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Taking into account the construction and operational potential impacts and the specified mitigation measures, it is considered that the residual impact of the identified developments on water will be slight due to measures inherent to the building design and that provided that appropriate mitigation measures are applied.

8. Biodiversity

Survey Programme

Scoping of the Data Centre development resulted in a wide variety of ecology surveys being completed from September 2017 to June 2018. Surveys included habitat surveys (September 2017); assessments of hedgerow condition and significance (October 2017); surveys of bat activity using walked transects and unmanned automated detectors (September and October 2017 and May 2018); ground-level inspections of trees with suitability to roosting bats (October 2017 and March 2018); licensed climbing inspections of pre-selected trees with moderate or high suitability to roosting bats (November 2017); surveys for breeding or resting sites of badger, otters and other protected mammals (November 2017); surveys for wintering birds (September 2017 to March 2018); surveys for spawn of common frog (February and March 2018); surveys for rare and invasive flora (June 2018), barn owl vantage point surveys (April and May 2018) and territory mapping for other breeding birds (April, May, and June 2018).

Habitats and Flora Survey Results

The Data Centre development site was in agricultural use at the time of survey and was dominated by semi-improved grassland apparently cut for hay. Individual fields were delineated by overgrown hedgerows (technically considered treelines) containing frequent semi-mature trees, and a relatively high diversity of woody species, compared to typical hedgerows of the region. Many hedgerows followed broad drainage ditches choked with instream vegetation indicative of nutrient-rich conditions. The site is relatively flat, and is bisected by a small tributary of the Pinkeen River (Portan Stream), running along the northern boundary of the Data Centre development site from east to west. There were no invasive species scheduled to the relevant Irish legislation found within the Data Centre development site or wider zone of influence. Two apparently uncommon rose hybrids were recorded within hedgerows; however, rose hybrids are severely under-recorded and difficult to identify without expert confirmation. No protected plant species, invasive species, or plants identified as of conservation concern on relevant Irish red lists were found within the Data Centre development site or wider zone of influence.

Fauna Survey Results (Mammals)

A preliminary ground level assessment for bat roost suitability was conducted on 102 trees within the Data Centre development and wider landownership boundary in October 2017. Following further assessment by licensed tree climbers of trees within the likely zone of influence of significant effects in November 2017, one tree was confirmed to contain a bat roost (a single hibernating bat in the *Pipistrellus* genus which could not be identified to species level using photographs of the tree interior made using a telescopic camera). The bat roost suitability rating for the remaining trees was reclassified following the tree-climbing surveys. This resulted in three, ten, eleven, trees being respectively classified as of High, Moderate, and Low suitability to roosting bats. The remaining trees were assigned a roost suitability rating of Negligible following reclassification. Two sets of dusk emergence and dawn re-entry surveys were carried out in May 2018 at all trees (or groups of trees) with High and Moderate suitability for roosting bats. A single soprano pipistrelle was observed to emerge from a transitional roost in one tree during a dusk emergence survey on 4 May 2018. No other roosting bats were recorded in these surveys.

Seven species of bat were recorded foraging or commuting within the Data Centre development site in September and October 2017 (common and soprano pipistrelle, Nathusius' pipistrelle, Leisler's bat, brown long-eared bat, Natterer's bat, and whiskered bat); representing relatively high diversity to many farmland sites. Only three species (common and soprano pipistrelle and Leisler's bat) were recorded foraging and commuting in May 2018.

Whilst evidence of badger was found throughout the site, no setts were recorded. No evidence of otter was found within the Data Centre development site, despite surveys along all watercourses during the optimal season.

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Three protected but common and widespread small mammal species for which field signs are rare (stoat, pygmy shrew, and hedgehog) were presumed present in hedgerows due to the presence of potentially suitable habitat.

Fauna Survey Results (Birds)

A single barn owl was incidentally recorded foraging and perching within the Proposed Development site during bat surveys in September 2017. No visual or audio evidence of barn owl was subsequently recorded during tree-climbing surveys in November 2017, and bespoke barn owl vantage point surveys in April and May 2018.Barn owl is presumed to occasionally forage within the Proposed Development site. Several territories each of two bird species of High Conservation Concern (yellowhammer and meadow pipit), four bird species of Medium Conservation Concern in Ireland, and 17 species of Low Conservation Concern were recorded breeding in the Proposed Development site and wider zone of influence.

Fauna Survey Results (Other Species)

Desktop data found no fish species of conservation had been recorded in the Pinkeen River downstream of the Data Centre development site. No designated salmonid waters occur in the catchment within which the Data Centre development site is located. One clump of common frog spawn was identified in drainage ditches in the southern part of the Proposed Development site. No butterflies of conservation concern on the Irish red list were recorded, and the habitats of rare or protected species was absent. A single stand of devil's bit scabious (several flowering stems) was recorded in one field margin within the Data Centre development site but this comprised insufficient habitat area to provide potential habitat to the European protected marsh fritillary butterfly. The Data Centre development site is considered to be sub-optimal for common lizard, however without evidence proving absence; at least some individuals are predicted to potentially occur.

Potential Impacts

Potential impacts on designated sites or salmonid habitats were predicted to be not significant. The geographic scale of (negative) impact significance was valued at County scale for loss of treelines (albeit there will be a net positive impact to the similar habitat hedgerows). Potential impacts to all other habitats were valued at Local scale. The geographic scale of impact significance was valued at Local-County scale for potential impacts to breeding meadow pipit and yellowhammer (High Conservation Concern), four bird species of Medium Conservation Concern, confirmed and potential bat tree roosts (including loss of one of the two confirmed tree roosts), and foraging bats. All other potential impacts to fauna were determined to be significant at Local levels. A range of cumulative effects were predicted, including in-combination effects with the existing adjacent data centre campus. However, none were determined to raise the geographic scale of impact significance relative to that from the Data Centre development alone.

Mitigation

In addition to the mitigation inherent in the design (i.e. landscape planting of native species and directional lighting for foraging bats), key mitigation proposals are:

- Artificial nesting and roosting box provision for birds and bats;
- Precautionary updated pre-construction surveys for mammals to determine if any breeding or resting sites have become established since the EIAR baseline surveys in winter 2017 to assess the need for licensing;
- Commission of an Ecological Clerk of Works (ECoW) to oversee and advise both contractors and site operators on mitigation implementation; and,
- Preparation and implementation of a Construction and Environmental Management Plan (CEMP).

Monitoring

An EcOW will be appointed by the Applicant to oversee, and advise on proper implementation of all ecological mitigation measures, and monitor their performance.

A key part of the ECoW's role will be to advise the contractor(s) on the implications of any pre-construction and / or updated ecological surveys for protected species, if necessary in accordance with relevant licenses.

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9. Air Quality

An air quality impact assessment has been undertaken to assess the impact of emissions from the construction and operation of the Proposed Development on local air quality.

The construction of the Data Centre has the potential to temporarily increase the rate of dust deposition and soiling, and short-term concentrations of particulate matter at nearby sensitive receptors, during construction activity. In the case of climate impacts the main climatic impacts of construction are expected to be minor emissions from truck movements and construction equipment.

The implementation of appropriate dust control measures, which are standard practice on all well managed construction sites, would be sufficient to control dust and particulate matter emissions at source, so that any impacts would not lead to a significant effect.

The Data Centre development comprising data centre buildings CLN 5 and CLN 6 is adjacent to and an expansion of an existing data centre campus. The dispersion model ADMS5 has been used to model the cumulative impact of the operation of the emergency back-up generators during testing and emergency operation on all the data centre buildings on the expanded campus. The dispersion modelling methodology includes consideration of existing background air quality, including the impact of the nearby M3 motorway, and has followed current best practice guidance for the quantification of impacts associated with intermittent emission sources.

The method used and associated dispersion modelling indicates that the potential impact of operation of the emergency back-up generators on local air quality would be not significant.

The cumulative impacts of all data centre buildings on the expanded campus have been considered in this impact assessment. In addition, a review of publically available data in relation to nearby regulated sites indicates that none of the sites release pollutants of relevance to the Proposed Development at levels which exceeds 100 tonnes per annum and hence the cumulative impacts associated with the Data Centre and Substation development are considered to be low.

10. Noise and Vibration

The Noise and Vibration chapter describes the potential noise and vibration impacts of the Data Centre development and Substation development on sensitive receptors, where any are likely to occur, in accordance with the requirements of the relevant EIA legislation and guidance on preparation and content of EIAR.

The potential for noise and vibration impacts resulting from the Data Centre and Substation developments on sensitive receptors are assessed in accordance with the EPA 'Guidelines on the Information to be contained in Environmental Impact Statements, 2002', 'Advice Notes on Current Practice (in preparation of Environmental Impact Statements', the "Guidelines on the information to be contained in Environmental Impact Assessment Reports" (EPA DRAFT AUGUST 2017), and the EPA's 'Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)' and in consultation with MCC.

Noise

The construction phase of the Data Centre development has the potential to increase noise levels at noise sensitive locations surrounding the Data Centre development site. Impact from the construction phase will depend on the number and type of equipment employed during the works. However, mitigation measures as presented in the chapter will reduce those impacts which will be transient and temporary in nature. As such, the construction phase impacts are predicted to be not significant.

The primary noise source from the Data Centre development in normal operating conditions will be the roof mounted Statepoint Liquid Cooling (SPLC) cooling plant on the roof of each of the two data centre buildings and minor mechanical plant on the roof of the administration building. The majority of the units on the roof of the Data Centre buildings will be surrounded by a screen wall which has a height of circa 15.9 m. The screen wall will

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serve to mitigate noise emissions from the roof plant. The Data Centre development is predicted to meet applicable noise limit values in all proposed standard operating scenarios at all sensitive receptors.

Vibration

In order to ensure that there is no potential for vibration damage during construction, which may be mainly derived from excavation; Transport Infrastructure Ireland (TII) recommends that vibration from road construction activities be limited to the values set out. These limits will be adhered to at all times during the construction phase of the Data Centre development.

Vibration impact for the operational phase of the project is predicted to be not significant.

Construction phase noise and vibration impacts from various sources such as construction plant and haulage vehicles have been addressed in the assessment and are not expected to have any significant cumulative impact.

In the operational phase no vibration sources are predicted outside of road traffic vibration which is not significant.

The noise and vibration impact of the Data Centre development in accumulation with the operation of the Substation development on the surrounding noise climate is predicted to be not significant considering the industrial zoning of the area.

11. Landscape and Visual

The Landscape and Visual chapter describes the landscape and visual effects of the Proposed Development in accordance with the relevant EPA Guidelines and general national and European best practice guidelines in relation to the preparation of Landscape and Visual Impact Assessments.

The assessment acknowledges that landscape and visual effects change over time as the existing landscape external to the Proposed Development evolves and proposed planting establishes and matures. The landscape and visual impact assessment seeks to identify, predict and evaluate the significance of potential effects to landscape characteristics and established views. The assessments are based on an evaluation of the sensitivity to change and the magnitude of change for each landscape or visual receptor.

The assessment of landscape character effects has found that no landscape designations will be affected by the Data Centre development. Significant, long-term and direct landscape effects within character areas located in County Meath will be experienced at the development site itself, where the existing agricultural landscape character will change into a light industrial landscape character. Significant, long-term and indirect effects on the landscape character will be experienced outside of the development site when in close proximity to the site or in the local area within approximately 1 km of the site. Changes to the landscape character will occur in the context of the existing zoning of the development site for high end technology and manufacturing developments and in the light of a wider landscape containing significant existing light industrial developments of similar nature to the east of Kilbride Road.

Indirect change and the magnitude of landscape effects will reduce to low and negligible with increasing distance from the Data Centre development in the wider study area (further than 500 m from the Data Centre development site boundary).

The Data Centre development is located within a lowland plain with some gentle undulations. The assessment of visual effects has found that no scenic and visual designations will be affected by the Data Centre development. Significant medium to long term effects will be mainly experienced within 1 km radius of the Data Centre development. However, existing road side and other intervening vegetation will often screen the lower parts of the Proposed Development and fencing. Localised medium to long-term significant effects will be experienced along the road network and from residential developments with views of the Data Centre development and fence proposals, mainly at the site entrance. The significance of visual effects will reduce quickly with distance from the site due to a dense and mature network of intervening vegetation along roads and field boundaries. Visibility of

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the proposed structures will also depend on seasonal aspects such as foliage and will be greatest during the winter months.

The majority of locations experiencing cumulative effects will be limited to areas located in the immediate vicinity of the Data Centre development site (townlands of Clonee, Portan, Loughsallagh and Gunnocks). The additional change to the landscape and visual resource in these areas due to the visibility of the Data Centre development will result in a moderate intensification of the light industrial character of the area.

In the wider study area, to the east and west, some intermittent views of the proposed Data Centre development in conjunction with the adjacent existing data centre campus may be potentially experienced. However at a distance greater than 1 km from the Data Centre development this change will be barely discernible.

Cumulative effects resulting from Proposed Development on the landscape and visual resource in views within the remaining wider study area (north and south of the site) are considered to be not significant as the Proposed development will not be seen in conjunction with other similar developments in the majority of available views due to existing intervening vegetation and topography as well as the effects of distance.

Long term residual effects will mainly arise from the height of the data centre buildings and boundary fence Type 1 at the site entrance and other sections of fencing not screened by existing or proposed vegetation. These adverse visual effects will be mainly experienced when in close proximity of the Data Centre development along the Kilbride Road (L5028), mainly by residents of the adjoining residential properties and dwellings located to the north of the site and other road users.

12. Cultural Heritage

The Cultural Heritage EIAR chapter identifies twelve archaeological and architectural heritage assets on which the Proposed Development has the potential to impact. Mitigation has been proposed in the form of archaeological excavation and landscape planting and design to reduce significant effects. Following mitigation there remains a residual effect upon assets:

- Portan/Gunnocks (A) townland boundary;
- Gunnocks/Loughsallagh (B) townland boundary;
- Clonee townland boundary with Loughsallagh/Gunnocks/Portan (C);
- Archaeological assets recorded during test trenching (D - J); and
- Potential unrecorded archaeological assets.

The asset of the Portan/Gunnocks, Gunnocks/Loughsallagh and Clonee townland boundary with Loughsallagh/Gunnocks/Portan (assets A - C) were identified as experiencing a medium impact from the Data Centre development. Mitigation in the form of archaeological recording of sections through the hedgebanks and boundary ditches will be completed, although this would not perceptibly reduce the overall level of the magnitude of impact from medium. The residual significance of impact would be slight, negative and permanent.

The assets discovered during trenching included evidence of pits, linears and two fulacht troughs (assets D - J). These assets would experience a very high impact from groundworks associated with the construction of the proposed data centre development. Mitigation in the form of archaeological excavation would reduce this impact by preserving an archaeological record of the assets. The magnitude of the impact would be reduced to high, the residual significance of which would be slight, negative and permanent.

Potential currently unrecorded archaeological deposits which are likely to be present within the Data Centre development site would experience a very high impact from the proposed date centre development. Mitigation has been proposed in the form of further archaeological testing and excavation, if appropriate, to determine the presence/absence of such features and to mitigate impacts arising from the Data Centre development. The successful implementation of a National Monument Service-approved mitigation strategy will reduce the significance of the residual impact to moderate, negative and permanent.

In relation to cumulative impact, none of the developments within the vicinity of the Proposed development site have the potential to cause any cumulative impact to the identified archaeological and architectural heritage resource. The developments comprising the cumulative scenarios include the adjacent existing data centre

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campus to east and the Substation to northwest. Neither of these developments have the potential to combine with the Data Centre development to block an important view, nor would the setting of any of the heritage assets be impacted. Therefore the cumulative impact of the developments on archaeology and cultural heritage is considered to be low and therefore not significant.

With the implementation of appropriate mitigation measures, the residual impact on previously unrecorded archaeological assets is moderate, permanent and negative. The residual impact on a number of assets in the Portan/Gunnocks, Gunnocks/Loughsallagh and Clonee with Gunnocks/Portan/Loughsallagh townland boundaries townland boundaries is be slight, negative and permanent.

13. Transport

The Transport EIAR Chapter describes the traffic and transport effects of the Data Centre development in accordance with the requirements of the relevant EIA legislation and guidance on preparation and content of EIAR.

Pre-application consultations were undertaken with the MCC Transport Department in December 2017, January, March and April 2018. The meetings provided the opportunity for AECOM to present the draft proposals and to scope out the Traffic and Transport report.

The development proposals include for upgrade works to Kilbride Road to enhance accessibility for all road users accessing the Data Centre development site from the Kilbride Road Roundabout Junction. The proposed works are illustrated in AECOM Drawing No. 60555536-SHT-20-0000-CH-0101. The design has been undertaken as per Design Manual Roads and Bridges (DMRB) and the National Cycle Manual (NCM) guidelines.

The Kilbride Road upgrade proposals comprises of approximately 510 m of existing carriageway to be widened. A summary of the road widening proposals is outlined as follows:

- 7.0 m wide carriageway, narrowing to tie into the existing Kilbride Road cross section to the north;
- 2.0 m wide off road cycle track on both sides of the carriageway;
- 2.0 m wide footway on the eastern side of the carriageway from the CLN1 – CLN3 site access to the CLN5 – CLN6 site access;
- 2.0 m wide footway on the western side of the carriageway from the CLN5 – CLN6 site access; to the northern junction with the existing residential estate; and,
- Uncontrolled pedestrian crossing between the 2 no. footways on either side of the carriageway.

The above proposals will assist to facilitate access for all road users to the site including, walking, cycling and vehicular travel.

In addition to the Kilbride Road upgrade, the proposals include for a connectivity underpass to link the Proposed Development with the existing adjacent data centre, which is owned and operated by the Applicant. The proposed connectivity underpass arrangement will be used by security staff via low speed electric vehicles, similar to golf cart style buggies to travel between the two sites, with also a 1.8 m wide footpath provision. It is anticipated it will also be used by administrative staff travelling between the two sites on foot and by bike, and eliminating unnecessary additional turning traffic on the Kilbride Road between the two sites.

An emergency access is proposed towards the western side of the development via the L10101. The proposed emergency access will include resurfacing the carriageway from the priority junction with the R147 Regional Road and the western corner of the site.

The transportation impacts, associated with both the construction and operational phase of the Proposed Development, upon the base conditions have been assessed by AECOM and the findings are reported within the EIAR Chapter.

The duration of the construction programme associated with the proposed Data Centre and Substation is anticipated to be circa 36 months. During the peak month of construction activity, it is anticipated that approximately 1,400 construction staff will be working on the Proposed Development.

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An Outline Construction Traffic Management Plan (Outline CTMP) has been prepared, with the input of the General Contractor. The Outline CTMP sets out a package of measures which will assist to reduce the impacts of the construction stage upon the surrounding road network, in particular during the morning (08:00 – 09:00) and evening (17:00 – 18:00) peak hours respectively. The measures will ensure the majority of construction traffic will access and exit the site during off-peak periods when traffic on the surrounding road network is considerably lower, thus the surrounding road network will have greater capacity to accommodate the proposed construction vehicles.

The northern M3 Motorway junction will be used for construction vehicles in order to improve traffic movements in the area. Construction access to the site will be provided via the existing CLN 1-3 campus. The construction entrance will be located at the existing construction entrance on the R147 road. It is proposed for construction traffic to travel through the CLN1-3 site via a dedicated construction route, cross the Kilbride Road at a dedicated controlled crossing and construction access point to access the proposed CLN 5-6 site, and vice versa for traffic exiting the site.

The residual impacts of the construction phase are a negative impact upon the road network. It should be noted that the impacts associated with the construction phase will be temporary in nature and mitigation measures are proposed by the Applicant to minimise the impacts within the Outline CTMP.

Once fully operational, it is anticipated that there will be approximately 155 people employed at the Data Centre and Substation, which will be in operation 24 hours a day, including a full time security presence. Non-shift employees will work normal business hours between 8am/9am and 5pm/6pm. Shift workers will work between 8am/9am and 5pm/6pm and between 5pm/6pm and 11pm/12am. The shift changes for security staff will be 6am, 2pm and 10pm. The shift patterns have been used to inform the anticipated traffic impact analysis section during the operational phase.

The residual impacts of the operational phase will result in a positive long-term impact the surrounding road network. New pedestrian and cycle infrastructure is proposed along Kilbride Road to promote sustainable travel.

In terms of cumulative impacts of the Data Centre and Substation developments during the construction and operations stages, the impacts upon the surrounding road network has been analysed. The results show that traffic and transport residual cumulative impacts are predicted to be positive long-term with this scheme.

14. Waste

Both the construction and operational phases of the Data Centre development will result in the generation of wastes.

Waste Management will form part of the overall Environmental Management Plan for the Construction Phase of the Data Centre development. This plan will be implemented by the Management Contractor for the entirety of the construction activities and will include specific detail relating to waste segregation and disposal.

It is anticipated that all spoil generated as a result of the excavations will be used elsewhere on the wider site for landscaping and grading purposes, subject to confirmation of its suitability for re-use. However, if the soil cannot be used on the site it will be removed to a suitable facility. The contractor will prepare a method statement outlining their proposals for the excavations and management of excavated material. This will outline the proposals for separating the material by grade of soil and details of spoil heights. If it becomes necessary to transport waste off-site for any reason, the carrier will be required to hold a valid Waste Collection Permit. Other wastes will be generated over construction period and will typically include steel, timber, rubble, plastic, packaging and canteen waste and small quantities of hazardous waste (e.g. paint containers, and oils & greases).

The operational phase of the Data Centre development will generate a small quantity of mostly non-hazardous wastes with some hazardous wastes. Segregation at the source will be practiced for waste generated on site. All waste will be managed through the proper channels and in accordance with all Irish and EU waste management legislation. Hazardous waste will be removed from site by a licensed specialist contractor.

There will be a short-term impact associated with the construction phase of the Data Centre development; however, due to the high level of recycling that will be achieved during the construction phase, through the implementation of the Construction & Demolition (C&D) Waste Management Plan (WMP), the impact will be short

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term and not significant. In the case of the operational phase of the Data Centre development the mitigation measures, (i.e. the implementation of the Operational WMP) will ensure the waste arising from the Data Centre development is dealt with in compliance with the provisions of the prevailing legislation and best practice and achieves optimum levels of waste reduction, re-use and recycling. The predicted impact of the operational phase will be long-term and imperceptible.

The cumulative waste impact of the Data Centre development has been considered in relation to a number of plans and projects in the vicinity of the development (including existing developments, permitted developments and developments for which planning has been applied, but not yet granted). The development comprising the cumulative scenarios include existing large developments in the vicinity of the site including the adjacent data centre campus and Damastown Industrial Estate to the east. The majority of the planning applications to the west of the development site are domestic in nature. The developments to the east and west will not create any significant impacts when considered together with the Proposed Development.

15. Material Assets Including Energy and Climate

The Material Assets chapter evaluates the potential impacts which the Data Centre and Substation development may have on Material Assets. Material Assets are defined in the Environmental Protection Agency (EPA) 'Advice Notes on Current Practice (in preparation of Environmental Impact Statements'), 2003 as '*resources that are valued and that are intrinsic to specific places*'. The advice notes also outline that Material Assets *'may be either human or natural in origin and the value may arise for either economic or cultural reasons'*. Chapter 12,13 and 14 discuss the assessment of Cultural Heritage, Transport and Waste Management respectively and therefore will not be discussed in this chapter.

The chapter evaluates the following economic assets of the site and environs:

- Ownership and access;
- Local settlement;
- Electricity supply and energy usage;
- Climate: Irelands carbon and renewable energy targets;
- Water supply and sewerage;
- Telecommunications;
- Agriculture; and
- Tourism.

Where relevant, several of these assets have been addressed in other chapters within the main EIAR and therefore, they are not discussed in detail in the Material Assets chapter. The remaining asset evaluations are summarised below.

Ownership and Access

The Proposed Development site, as described in Chapter 2 (Project Description), is currently in private ownership. A letter of consent from the current landowner to apply for development on the site is included with the planning application.

Local Settlement

Clonee village located to the south of the site on the south side of the M3 Motorway is the nearest significant settlement to the Data Centre development.

The Data Centre development activities will result in the generation of few air, noise or water emissions during normal operations, and as such, it is anticipated that the Data Centre development will not generate negative associations/perceptions which can negatively affect property prices.

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The Proposed Development is to be located on a greenfield location adjacent to an existing adjacent data centre campus and large industrial park to the east. Given both the nature of the activity and the relatively low-level of immediate residential settlement directly around the site, it is anticipated that the Proposed Development will have no negative impact on property prices.

The Proposed Development activities will not result in the generation of significant air, noise and water emissions during normal operations and, as such, is not the sort of development which would normally generate negative associations/perceptions that can negatively affect property prices (i.e. heavy industry or facilities which can generate nuisance odours etc.). Furthermore, as the Proposed Development site is industrially zoned, and the project would encompass a large portion of the zoned lands, the presence of such a low-impact activity would remove uncertainly in the minds of prospective home buyers with regard to the potential of a more onerous industrial land use on this site in the future.

Electricity Supply & Energy usage

The Proposed Development comprises two data centre buildings, CLN 5 and CLN 6. The energy required for the two new buildings will be provided from the proposed Substation development to be constructed on the site. Each building is designed with an Estimated Maximum Electrical Import (EMEI) of 36 MW, which is consistent with the existing technologies and equipment deployed for CLN 1, 2 & 3. Consequently, the total EMEI of the Proposed Development is 72 MW[1].

Climate: Ireland's Carbon and Renewable Energy Targets

While the proposed Data Centre development will not be operational before 2020, recognizing the importance of Ireland's 2020 targets and the expectation of future emissions goals, it was considered appropriate to address these targets here. It is the goal of the Applicant to source electricity for its operations from 100% renewable energy sources in Ireland in which case the greenhouse gas (GHG) emissions from electricity consumption for the entire campus would be minimised and could as low as zero.

There are a number of agreements and commitments which apply and are considered here, namely:

- Commitments to reduce emissions at a national and EU level made under the Kyoto, Doha, and Paris agreements, which include:
  - Non-Emission Trading Scheme (non-ETS) emissions commitments at an Irish and EU level made under the EU's Effort Sharing Decision (ESD) and the forthcoming Effort Sharing Regulation (ESR)[2];
  - EU Emissions Trading Scheme (ETS) emissions commitments (at an EU level only)[3]; and
- Renewable energy commitments for Ireland[4].

Water Resources

Chapter 7 Water deals with water resources associated with the Proposed Development.

The Proposed Development has both human water demand and process water demand. The use of process water on site is primarily for cooling of the equipment in the data centre. The volume of water used is related to ambient temperature and will fluctuate accordingly.

The predicted process and human and combined (total) water demand is 40 - 60 L/s.

Water supply for the site will be provided by Irish Water from a new watermain on the Kilbride Road (L5028) and a watermain currently under construction to the south of the site.

Sewerage

Chapter 7 Water deals with process and foul effluent associated with the Proposed Development. The predicted effluent from the Proposed Development will comprise both sanitary and process water. Process effluent will be predominantly water from cooling processes related to the data centres. A network of pipes will be installed within the Proposed Development to separately collect foul and process water drainage.

[1] The additional 72MW associated with the Proposed Development brings the total EMEI for the expanded data centre campus to 180 MW
[2] Decision 406/2009/EC
[3] Directive 2003/87/EC, as amended by Directive 2009/29/EC.
[4] Directive 2009/28/EC.

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The predicted wastewater discharge volumes for process effluent combined with the sanitary effluent will generate a peak discharge rate of circa 10 to 16 L/s.

Due to the relatively flat topography of the Proposed Development site a series of pumping stations and rising mains will be required to transport wastewater to a terminal pumping station within the site. This plant will pump the wastewater to an existing 9C sewer located on the R147 road; the 9C truck sewer provides drainage for the Blanchardstown area.

Telecommunications

There are robust telecommunication lines in existence for telephone and broadband services in the area, and fibre provisions for the Proposed Development will be facilitated through connection to the existing adjacent data centre campus.

Agriculture

The Proposed Development is located on lands which are zoned for industrial use. However, the land has most recently been used for agricultural activities. It is not anticipated that the operation of the proposed facility will have any significant impact on agriculture in the wider environs of the Proposed Development site. Emissions from the Proposed Development with the potential to impact on local agriculture are addressed in the respective chapters including Chapter 5 Population and Human Health, Chapter 6 Land and Soils and Chapter 7 Water.

Tourism

The Proposed Development is located in an industrial/residential area with Damastown Industrial Park and the existing adjacent data centre campus located to the east of the site and the M3 Motorway directly to the south. As such, tourism is not a major industry in the immediate environs of the Proposed Development. The proposed development will not affect tourism due its location and because the landscape and visual effects will be limited to the area in close proximity to the site.

16. Interactions of the Foregoing

The Interactions of the Foregoing chapter evaluates the potential interaction of impacts described within the main EIAR, which the Data Centre and Substation development may have on the receiving environment and sensitive receptors.

As a requirement of *European Communities (Environmental Impact Assessment) Regulations 1999 (S.I. No. 93 of 1999),* and of other relevant legislation, best practice guidelines and advice notes, the inter-relationships between individual factors must be identified and assessed.

Part II (2nd Schedule) of the Regulations requires that the interactions between the following be assessed:

- Population and Human Health;
- Land and Soil;
- Water;
- Biodiversity;
- Air Quality;
- Cultural Heritage;
- Landscape and Visual; and,
- Material Assets including Energy and Climate.

In addition, the interactions between these elements above and that of the noise and vibration impact have also been considered and there will be no significant effects.

The Data Centre development will lead to the positive impact of the provision of temporary and permanent employment in the construction phase, similarly, in the longer term the Data Centre development will also provide

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permanent direct employment. Neutral cumulative impacts on biodiversity, air, noise, and water/effluent, landscape and archaeology and architectural heritage were also identified.

An imperceptible, negative impact will arise due to the interaction between the Data Centre development and Land and Soils, as the Data Centre development will result in the loss of agricultural land use. However, positive impacts examined include employment opportunities in the construction phase and as part of the Data Centre development operational phase.

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Appendix – Summary of Proposed Mitigation Measures

Appendix – Summary of Proposed Mitigation Measures

Chapter Name	Potential Impact	Mitigation Measures- Data Centre	Mitigation Measures - Substation
Biodiversity	General	Inherent mitigation: • A Construction Environmental Management Plan (CEMP) will be implemented in addition to site-specific measures for all mitigation measures; • Retention of existing hedgerows where they fall outside the footprint of the proposed development; • Planting of species-rich woodland belts on landscaped berms used for visual screening, and on flatter areas in the undeveloped margins of the proposed development site, and along the margins of proposed attenuation ponds; • Species-rich wildflower mixes (native, of local provenance and nursery grown stock) in landscaped turf (e.g. 'Traditional Irish Wildflower Meadow Mixture (WF01)' (www.wildflowers.ie), or similar suited to any dry to moist soils which are neither overly acidic or alkaline); • Use of native plantings only (with the exception of non-native beech trees); • Cowled lighting through the proposed development site to direct light spill away from both retained and created hedgerows; • Use of low-pressure sodium lights in preference to high pressure sodium lights or mercury lamps. If mercury lamps are to be used, ultraviolet (UV) filters will be fitted; • Unlit areas (i.e. no light masts) are proposed near retained hedges along parts of the northern and southern boundary of the proposed development, and the use of low lumen lighting near attenuation ponds if needed; • Lighting will not illuminate any bat roost (both trees with confirmed roosts or bat boxes erected as mitigation); and • During the operational phase, pollution prevention measures comprising the installation of a sustainable drainage system, the inclusion of oil interceptors, and storage of diesel in individual integrally bunded belly storage tanks will be implemented. Additionally, a leak detection system will be present on each tank.	Inherent mitigation: • An outline Construction Environmental Management Plan (CEMP) will be implemented in addition to site-specific measures for all mitigation measures; • Cowled lighting through the proposed development site to direct light spill away from both retained and created hedgerows; • Use of low-pressure sodium lights in preference to high pressure sodium lights or mercury lamps. If mercury lamps are to be used, ultraviolet (UV) filters will be fitted; • Lighting will not illuminate any bat roost (both trees with confirmed roosts or bat boxes erected as mitigation); and • During the operational phase, pollution prevention measures comprising the installation of a sustainable drainage system, the inclusion of oil interceptors, and storage of diesel in individual integrally bunded belly storage tanks will be implemented. Additionally, a leak detection system will be present on each tank.
Biodiversity	Construction	• Precautionary additional pre-construction surveys for mammals to determine if any breeding or resting sites have become established since the EIA surveys in winter 2017, which would warrant licensing supported by a mitigation plan • Commission of an Ecological Clerk of Works (EcOW) to oversee and advise both Contractors and site operators on mitigation implementation • The proposed felling of or removal of dead wood from trees identified as having suitability for roosting bats will be minimised through joint agreement with the ECoW, a suitably experienced bat ecologist, the arboriculturalist, the operator, and any other relevant parties, having regard for Health and Safety considerations; • Any tree which has been identified as having Moderate or High suitability for roosting bats must be subject to pre-construction surveys to inform licencing requirements from the NPWS, including any licensed mitigation • Subject to agreement with NPWS, trees identified as having Low suitability for roosting bats may be felled without further survey or licensing. However, these trees will be control-felled in accordance with NRA (2005) guidance, including the requirement to nudge each tree five times with a digger bucket to encourage bats to disperse (leaving 30 second interval between nudges), followed by felling without acceleration (e.g. using tractor and chain). • A minimum of 20 no. artificial bat roosting boxes will be provided for in sufficient numbers for the receiving environment installed at appropriate locations under the direction of a suitably experienced bat ecologist (e.g. on mature trees; at a height to allow access and egress by flying bats; concealed from potential vandalism; protected from light spill and incidental damage during construction or operation). The suitably experienced bat ecologist will advise the operator on appropriate annual maintenance of boxes to be considered in conjunction with landscape maintenance requirements. • Avoid vegetation removal during March - August inclusive. Any vegetation clearance work undertaken within the bird breeding season will be approved by the ECoW who will (with reference to standard guidance on nest findings including Ferguson-Lees et al., 2011) make a detailed check of any suitable vegetation for nests prior to vegetation/tree removal, and advise the contractor(s) of any exclusion zones around potential or confirmed nests. This existing mitigation will simultaneously avoid the majority of the main breeding season for pygmy shrew and hedgehog which run from April-October, and stoat, which breeds in May-June • An adequate number of artificial hedgehog nesting boxes will be provided for the receiving environment and will be installed in sheltered areas in scrub and hedgerows to be retained (where there will be limited disturbance from traffic or human activity), with entrances pointing away from prevailing winds. Straw will be inserted in each box during installation to encourage usage. During the operational phase of the development contractors tasked with management of the site will clean out nest boxes annually in April or September using boiling water. Boxes will be left to dry. Hedgehogs found to be	• Precautionary additional pre-construction surveys for mammals to determine if any breeding or resting sites have become established since the EIA surveys in winter 2017, which would warrant licensing supported by a mitigation plan • Commission of an Ecological Clerk of Works (EcOW) to oversee and advise both Contractors and site operators on mitigation implementation • Cowling of perimeter lighting for bats will simultaneously reduce displacement of barn owls from adjacent foraging habitats

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Chapter Name	Potential Impact	Mitigation Measures- Data Centre	Mitigation Measures - Substation
		present will be left undisturbed. • Two barn owl nesting boxes (to specification of UK Barn Owl Trust's tree box or similar) will be installed at appropriate locations under the direction of a suitably experienced ecologist in accordance with relevant guidance on installing barn owl nest boxes such as that freely available online from the UK Barn Owl Trust. Boxes will be installed in the lands to the north of the proposed Data Centre development buildings, to ensure boxes are at least 1 km from the M3 motorway. • Cowling of perimeter lighting for bats will simultaneously reduce displacement of barn owls from adjacent foraging habitats • Artificial bird nesting boxes will be provided for the receiving environment and will be installed at appropriate locations under the direction of a suitably experienced ecologist (e.g. on mature trees; oriented north or eastwards away from prevailing winds; at a height to allow access and egress by flying birds; concealed from potential vandalism; and protected from light spill and incidental damage during construction or operational phases). Given the net loss of treelines containing deadwood nesting opportunities, a minimum of 20 boxes should be provided to include a mix of open-fronted boxes (suitable for thrushes), and hole-nesting boxes (both 25 mm and 28 mm diameter holes; suitable for tits and other hole-nesting species). • Instream works within drainage ditches will be scheduled outside the peak spawning season (where practicable) for the species (i.e. instream works will take place from April to December (where practicable), subject to the EcOW determining there is no risk to breeding birds). Where the programme does not accommodate this seasonal restriction, relevant ditches will be surveyed to identify locations of any spawn and where necessary a licence will be obtained from the NPWS to permit the translocation the spawn outside of the working area in advance of construction.	
Biodiversity	Operational	• Operational phase pollution prevention by the installation of a sustainable drainage system, the inclusion of oil interceptors, storage of diesel in individual integrated double-skinned belly storage tanks beneath each generator. Leak detection system present on each tank. Annual cleaning and maintenance of bat roosting boxes in compliance with licensing. • The ECoW will advise the site operator on appropriate measures to carry out annual cleaning and maintenance of bat roosting boxes, in compliance with licensing. The ECoW and arborist will also agree protocols to ensure any pruning of trees known or with the potential to contain roosting bats is carried out in compliance with the legislation including any licensing. Should bats be found to be present in nesting box, all maintenance will be stopped. Bat Conservation Ireland and the NPWS will be contacted regarding the appropriate course of action to take. • Management companies and / or contractors tasked with management of the site will clean out bird nesting boxes annually during winter using a mild disinfectant, after removing any old nests present (which can act as a source of parasites) • Assess need to replace bird boxes every 5 years. All maintenance works will have regard for any licensing conditions. • Adopt rodenticide procedures in line with advice from Birdwatch Ireland for the protection of barn owls. For example, use baits only for as long as it is necessary to achieve satisfactory control and normally no longer than 35 days in any treatment In accordance with advice of Birdwatch Ireland, building managers will adopt the following practices: • Use baits only for as long as it is necessary to achieve satisfactory control and normally no longer than 35 days in any treatment; • Remove all bait at the end of the treatment – if a bait box is not used, use bait trays to make removal easier. As well as reducing the risk of poisoning non-target wildlife, this can help limit the build-up of resistance amongst the rat population, therefore making any future control easier; • Ensure bait is sufficiently protected to avoid other birds and mammals eating it. Use natural materials where possible. If using bait in sachets or blocks, ensure these are fixed in position to prevent rats moving them; • Hole or burrow baiting can be effective but treated areas must be covered or plugged to prevent other animals taking the bait, and need checking regularly; and • Carry out regular inspections to search for rodent bodies, both during and after the treatment period. Although many rats die underground, it is crucial to search for bodies at the surface and under any cover, so that scavengers do not find them and become victims of secondary poisoning.	• Adopt rodenticide procedures in line with advice from Birdwatch Ireland for the protection of barn owls. For example, use baits only for as long as it is necessary to achieve satisfactory control and normally no longer than 35 days in any treatment In accordance with advice of Birdwatch Ireland, building managers will adopt the following practices: • Use baits only for as long as it is necessary to achieve satisfactory control and normally no longer than 35 days in any treatment; • Remove all bait at the end of the treatment – if a bait box is not used, use bait trays to make removal easier. As well as reducing the risk of poisoning non-target wildlife, this can help limit the build-up of resistance amongst the rat population, therefore making any future control easier; • Ensure bait is sufficiently protected to avoid other birds and mammals eating it. Use natural materials where possible. If using bait in sachets or blocks, ensure these are fixed in position to prevent rats moving them; • Hole or burrow baiting can be effective but treated areas must be covered or plugged to prevent other animals taking the bait, and need checking regularly; and • Carry out regular inspections to search for rodent bodies, both during and after the treatment period. Although many rats die underground, it is crucial to search for bodies at the surface and under any cover, so that scavengers do not find them and become victims of secondary poisoning.
Land & Soils	Outline Construction Environmental Management Plan (OCEMP)	An Outline Construction Environmental Management Plan (OCEMP) has been prepared for the proposed Data Centre development which incorporates relevant environmental avoidance or mitigation measures to reduce potential environmental impact of the construction work and will cover all potentially polluting activities and include an emergency response procedure. A project-specific iterative Construction and Environmental Management Plan (CEMP) will be established. The CEMP will be maintained by the contractor during the construction phase and be expanded upon in terms of detailed construction actions. 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 procedures.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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		The CEMP will also include a Waste Management Plan, to be prepared in accordance with Department of Environment, Community & Local Government guidelines. It will also include details of environmental monitoring for the duration of the construction works.	
Land & Soils	Soil removal and compaction (during construction)	Temporary storage of soil will be carefully managed in such a way as to prevent potential negative impact on the receiving environment. Spoil and temporary stockpiles including stone stockpile areas will be positioned in locations which are distant from drainage systems and retained drainage channels, away from areas subject to flooding so as not to cause potential run off to soil and groundwater. In order to minimise the potential environmental impact of stockpiles, the OCEMP includes the following mitigation measures: • Position spoil and temporary stockpiles in locations which are distant from drainage systems; • Store excavated topsoil for reuse in graded stockpiles less than 3m high to prevent damage to the soil structure. Other excavated materials of lower engineering quality can be stored in higher piles; • To help shed rainwater and prevent ponding and infiltration the sides and top of the stockpiles will be regraded to form a smooth gradient. with compacted sides reducing infiltration • Segregate different grades of soil where they arise and topsoil will first be stripped from any land to be used for storing subsoil.; and • Minimise movements of materials within the stockpiles in order to reduce the degradation of the soil structure. 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, this soil will be segregated and samples of this soil analysed for the presence of possible contaminants in order to determine an appropriate disposal outlet. It is anticipated that surplus spoil generated from the “cut and fill” process, estimated at 72,000m^3 of surplus material while the underpass construction, estimated at 6,650m^3, will require off-site disposal. This spoil will consist of greenfield topsoil and subsoil and will be reused, where possible, off-site. Any soil removed from site will be subject to waste classification in accordance with relevant waste legislation.	The mitigation measures outlined for the Data Centre development also apply for the Substation development. It is not anticipated that there will be significant off-site removal of soil during the proposed Substation development, as it is proposed that topsoils and subsoils removed will be reused where appropriate for infilling, grading and landscaping within the site of the Proposed Development.
Land & Soils	Fuel and chemical handling (construction phase)	In order to prevent spillages to ground of fuels, and to prevent any consequent soil or groundwater quality impacts, it will be necessary to adopt mitigation measures at the construction site, including specifically: • Designate a bunded storage area at the contractor’s compound for all oils, solvents and paints used during construction. Oil and fuel storage tanks will be bunded to a volume of 110% of the capacity of the largest tank/container within the bunded area. Drainage from the bunded area will be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the site a suitably sized spill pallet will be used for containing any spillages during transit; • 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 gullies or drains. Spill kit facilities will be provided at the fuelling area in order to provide for accidental releases or spillages in and around the area. Any used spill kit materials will be disposed of using a hazardous waste contractor; and • Where mobile fuel bowsers are used on the site in the event of a machine requiring refuelling outside of the designated area, fuel will be transported in a mobile double skinned tank. Any flexible pipe, tap or valve will be fitted with a lock where it leaves the container and locked shut when not in use. The pump or valve will have a lock and be locked shut when not in use. Each bowser will carry a spill kit and each bowser operator will have spill response training.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Land & Soils	Control of concrete and lime (construction phase)	Ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be included in the CEMP prior to works being carried out. This will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil. The pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility offsite. • Rain water will be diverted away from the construction areas into nearby ditches and streams. Water will be filtered and treated to prevent sediment from entering ditches and water streams. A monthly water sampling regime will be put in place for the Portan and Pace Streams during construction activity on site. Water samples will be taken at specified locations. • Works requiring discharge of water from excavations or areas of water which may have come in contact with concrete or cementitious material requires a Permit to Pump. All water must be tested for pH readings by contractors, and discharging water must go through a series of filtration systems before final discharge.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Land & Soils	Surface water runoff (construction phase)	• Water containing silt will be passed through silt fences and then to an attenuation pond to ensure silt removal prior to discharge	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Land & Soils	Sources of aggregates and clean fill for the project (construction phase)	The source of this fill material will be vetted in order to ensure that it is of a reputable origin and that it is ‘clean’ (i.e. will not introduce contamination to the environment). All potential suppliers will be vetted for the following criteria:	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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		• Environmental management status; and • Regulatory and legal compliance status of the company. Clean fill material will be sourced from suppliers which comply with the above requirements. If recycled aggregate is used as imported fill, rigorous chemical testing will be undertaken to confirm that it is 'clean' (i.e. will not introduce contamination to the environment).	
Land & Soils	Fuel and chemical handling (during operational phase)	All hazardous or water polluting materials will be handled or stored in a manner to prevent/minimise potential impact on soil and groundwater. Emissions from fuel spills or leaks or runoff from rainwater that has passed over impermeable surfaces will be prevented from entering the soil and/or underlying groundwater as all surface water runoff from the fuel storage area will be directed to oil interceptors prior to discharge to the drainage system. With regard to the emergency back-up generators associated with the proposed development, the diesel will be stored in individual integrated double skinned belly storage tanks located within the generator enclosure. If a leak from one of the tanks were to occur this would be identified by the leak detection system that will be present on each tank. The generator would be disabled in this event and the fuel would be allowed to collect within the second skin of the tank, which will have a 110% capacity. Releases from fuel spills or leaks or runoff from rainwater that has passed over impermeable surfaces will be prevented from entering the soil and/or underlying groundwater as all surface water runoff from the generator yards will pass through hydrocarbon interceptors prior to discharge to the surface drainage system. In addition there will be a shut off valve from the generator yard to the external surface water drainage system. Small emergency back-up generator diesel tanks within the substation development will be double skinned and bunded (110% volume of tank). Therefore, spills will be collected within the bunds if they occur. Spills during fuelling could in theory discharge to ground; however, this will be prevented from entering the soil and/or underlying groundwater as all surface water runoff from around the generators will be directed to an oil/water interceptor prior to discharge to the drainage system. Spill kits will be located at strategic points around the site in order to ensure a quick response to any spillages which occur. Any used spill kits will be disposed of using a hazardous waste disposal contractor and in accordance with all relevant EU and Irish waste management legislation (i.e. the Waste Management Acts 1996 – 2011 and the regulations made thereunder, and the Waste Framework Directive). The EPA Guidance Note 'Storage and Transfer of Materials for Scheduled Activities' shall be taken into account when designing material storage and containment on site.	The mitigation measures outlined for the Data Centre development also apply for the Substation development. Despite the transformers not strictly being oil storage containers, there will be a continuous bund wall surrounding each transformer, which will be sealed by means of an impervious base set at such a depth as to retain a minimum of 110% of the total quantity of oil present in the transformer, below the fire trap. The bund will be tested after construction and during maintenance to ensure the water depth loss is no more than 1mm/hour over a continuous 6 hour period. Automatic emptying of rain water from the bund is achieved with a BundGuard© system or similar.
Land & Soils	Environmental Management Plan (construction and operational phase)	An environmental management plan will be prepared for the Data Centre development during the operational phase incorporating all mitigation measures and emergency response measures, as described in this assessment.	Not applicable
Water	OCEMP	An Outline Construction Environmental Management Plan (OCEMP) has been prepared for the proposed development which incorporates relevant environmental avoidance or mitigation measures to reduce potential environmental impact of the construction work and will cover all potentially polluting activities and include an emergency response procedure. A project-specific iterative Construction and Environmental Management Plan (CEMP) will be established and maintained by the contractor during the construction phase and be expanded upon in terms of detailed construction activities. 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 procedures. The CEMP will also include a Waste Management Plan, to be prepared in accordance with Department of Environment, Community & Local Government guidelines. It will also include details of proposed environmental monitoring for the duration of the construction works.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Water	Surface water / storm water (construction phase)	During the construction phase the mitigation measures will ensure that no sediment contamination, contaminated runoff or untreated wastewater will enter watercourses on or near the site. Drains carrying high sediment load will be diverted through settlement ponds, located between the construction area and the nearest field drain. Surface water runoff from working areas will not be allowed to discharge directly to the local watercourses. To achieve this, the drainage system and settlement ponds will be constructed prior to the commencement of major site works. During the construction activities there will be a requirement for diverting rain water away from the construction areas, into nearby drainage channels and streams. Water will be filtered and treated to prevent sediment from entering drainage channels and water streams. A monthly water sampling regime will be put in place for the Portan and Pace streams during construction activity on site. Excavations will only remain open for the shortest possible time to reduce groundwater ingress. Silt traps will be placed around the site to reduce silt loss and these will be inspected and cleaned or replaced regularly. Discharge consent will be obtained for disposal of ground water arising from pumping or such water may be disposed of as construction site run off having first passed through a settlement tank or filtration system, where appropriate. To minimise impact from material spillages, oils, chemicals and waste material will be stored within temporary bunded areas with a volume of 110% of the capacity of the largest tank / container within it. Fuel, oil and chemical filling and draw-off points will be located entirely within the bunded area(s). Drainage from the bunded area(s) will be diverted for collection and disposal.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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		Vehicle / equipment refuelling and maintenance with hydraulic oil or lubricants will take place in bunded areas where possible. If it is not possible to bring the machine to the refuelling point, fuel will be delivered in a double-skinned mobile fuel bowser. Drip trays will be used to contain spillages with spill kits and hydrocarbon absorbent packs stored in vehicle cabs with operators fully trained in their use. Vehicles and equipment will not be left unattended during refuelling operations. Spoil and temporary stockpiles including stone stock pile areas will be positioned in locations which are distant from drainage systems and retained drainage channels, away from areas subject to flooding. Runoff from spoil heaps will be prevented from entering watercourses by diverting it through the on-site settlement ponds and removing material off-site as soon as possible to designated storage areas. Culverts beneath temporary access roads will be located at or close to the locations of natural flow paths to allow existing flows to continue. Lateral drainage will be within shallow geotextile and rock lined ditches to avoid the drainage of surrounding soils. At the point where the perimeter fence crosses the Portan Stream and Pace Stream, there will be a requirement for fencing to be extended below the water surface. This fencing will not impact surface water flow, but it will be necessary to ensure that any build-up of vegetation or litter will need to be monitored and handled appropriately. Such maintenance shall be carried out during the construction and operational phase on a routine- and an as-needs basis (e.g. weekly) to ensure that flows are maintained and that no risk of flooding exists upstream of the fence-line and shall be outlined within the CEMP. All watercourse crossings should be planned in consultation with OPW and in accordance with applicable guidelines. Permanent watercourse diversions will be designed to replicate the existing natural watercourse. Silt traps will be placed at crossing points to avoid siltation of watercourses. These will be maintained and cleaned regularly throughout the construction phase. Attention will also need to be paid to preventing the build-up of dirt on road surfaces, caused by lorries and other plant entering and exiting the site.	
Water	Control of concrete and lime (construction phase)	Measures for protection of watercourses from wet concrete are included in the OCEMP and the following measures will be implemented to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil/groundwater or nearby surface water: • Ready-mixed concrete will be brought to site by truck, therefore concrete will not be required to be mixed on-site. • 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 wastewaters or contaminated storm water. • The pouring of concrete will take place within a designated area using a geosynthetic material to prevent concrete runoff into the soil/groundwater media. • Washout of concrete transporting vehicles will take place at an appropriate facility offsite where possible alternatively, where wash out takes place on-site, it will be carried out in carefully managed on-site wash out areas. • Rain water will be diverted away from the construction areas into nearby ditches and streams. Water will be filtered and treated to prevent sediment from entering ditches and water streams. A monthly water sampling regime will be put in place for the Portan and Pace Streams during construction activity on site. Water samples will be taken at locations which will be specified in the detailed CEMP. • Works requiring discharge of water from excavations or areas of water which may have come in contact with concrete or cementitious material will be controlled using a permit system (Permit to Pump). All water must be tested for pH readings by contractors, and discharging water must go through a series of filtration systems before final discharge.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Water	Drainage (construction phase)	Drains carrying high sediment load will be diverted through settlement ponds, located between the construction area and the nearest field drain. Surface water runoff from working areas will not be allowed to discharge directly to the local watercourses. To achieve this, the drainage system and settlement ponds will be constructed prior to the commencement of major site works. All design and construction will be carried out in accordance with CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Water	Water supply (construction phase)	The details of the temporary water supply for the construction phase of the project shall be agreed with Water Services Section of Meath County Council and / or Irish Water prior to commencement.	The water supply for the Substation development will be the same as for the Data Centre development.
Water	Foul sewer (construction phase)	Foul sewage arising from temporary toilets and sanitary facilities on site will initially be discharged to an on-site receptacle which will require to be emptied on a regular basis. This arrangement will be in place until the terminal pumping station and associated infrastructure is constructed and commissioned at which point foul sewage can be transferred off-site via this main. It is anticipated that due to the scale of the development that a temporary canteen will also be provided on site during construction. Provisions will be made for a grease trap at the canteen drain outlet and this will connect to the foul sewer. Drumming and regular transporting off site via a permitted waste carrier to licensed disposal facilities of waste cooking oil within the canteen will also be provided.	The foul sewer arrangement for the Substation development will be the same as for the Data Centre development.
Water	Surface water / storm water (operational phase)	All hazardous or water polluting materials will be handled or stored in a manner to prevent/minimise potential impact on soil and groundwater. Emissions from fuel spills or leaks or runoff from rainwater that has passed over impermeable surfaces will be prevented from entering the soil and/or underlying groundwater as all surface water runoff from the fuel storage area will be directed to oil interceptors prior to discharge to the drainage system. The use of petrol interceptors will significantly reduce the likelihood of water contamination from spills.	The mitigation measures outlined for the Data Centre development also apply for the Substation development. With regard to the Substation, despite the transformers not strictly being oil storage containers, there will be a continuous bund wall surrounding each the transformer, which will be sealed by means of an impervious base set at such a depth as to retain a minimum of 110% of the total quantity of oil present in the transformer, below the fire trap. The bund will be tested after construction and during maintenance to ensure the water depth loss is no more than 1mm/hour over a continuous 6 hour period. Automatic emptying of rain water from the bund is achieved with a

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		With regard to the emergency back-up generators associated with the proposed development, the diesel will be stored in individual integrated double skinned belly storage tanks beneath each generator. If a leak from one of the tanks were to occur this would be identified by the leak detection system that will be present on each tank. The generator would be disabled in this event and the fuel would be allowed to collect within the second skin of the tank, which will have a 110% capacity. Small emergency back-up generator diesel tanks within the substation development will be double skinned and bunded (110% volume of tank). Therefore, spills will be collected within the bunds if they occur. Spills during fuelling could in theory discharge to ground; however, this will be prevented from entering the soil and/or underlying groundwater and from there enter surface water. The generator yards will be surfaced with concrete and all surface water runoff from around the generators will be directed to an oil/water interceptor prior to discharge to the drainage system. In addition there will be a shut off valve from the generator yard to the external surface water drainage. These measures will significantly reduce the likelihood of water contamination from spills and the impact of accidental spills should they occur. Spill kits will be located at strategic points around the site in order to ensure a quick response to any spillages which occur. Any used spill kits will be disposed of using a hazardous waste disposal contractor and in accordance with all relevant EU and Irish waste management legislation (i.e. the Waste Management Acts 1996 – 2011 and the regulations made thereunder, and the Waste Framework Directive). The EPA Guidance Note 'Storage and Transfer of Materials for Scheduled Activities' shall be taken into account when designing material storage and containment on site. In the event of a fire, the fire water will drain through the storm sewerage system and hydrocarbon interceptors (where present) to the attenuation ponds. The attenuation ponds will attenuate peak discharges from storm events by allowing a controlled release of water into the adjacent watercourse, thus reducing flash flooding within the channel. This will also assist in the prevention of bank erosion within the channel, lowering sediment release and the subsequent potential for adverse impact on the fish population. Ecologically, the attenuation ponds will also assist in the filtration of contaminants. Solids removal is one of the main features of attenuation ponds, and high removal rates are possible. Nutrient and trace metals removal is more modest with uptake by some of the vegetation species within the ponds. In accordance with CIRIA C697 'The SuDS manual', the lined attenuation ponds have been designed to facilitate a 1-in-100 year flood event plus a 10% allowance for climate change. Solids removal is one of the main features of attenuation ponds, and high removal rates are possible. Nutrient and trace metals removal is more modest. In essence, the attenuation ponds will attenuate peak discharges from storm events by allowing a controlled release of water into the adjacent watercourse, thus reducing flash flooding within the channel. This will also assist in the prevention of bank erosion within the channel, lowering sediment release and the subsequent potential for adverse impact on the fish population. Ecologically, the attenuation ponds will also assist in the filtration of contaminants, due to their uptake by some of the vegetation species within the ponds. In accordance with CIRIA C697 'The SuDS manual', the attenuation ponds have been designed to facilitate a 1-in-100 year flood event plus a 10% allowance for climate change.	BundGuard© system or similar.
Water	Foul sewer (operational phase)	All wastewater from the proposed developments will discharge via the purpose built sewage network and the terminal pumping station which will be situated underground north of the data centre buildings. This in turn will transfer the flows to the existing sewer located on the Kilbride road. The terminal pumping station will not have an emergency overflow due to the potential adverse impact of a discharge on site watercourses. It will have 24 hours storage due to the hydraulic restriction on the existing sewer network. Electricity to the pumping station will be supplied from the proposed data centre building which will have emergency back-up generators. The terminal pumping station will have two pumps which will operate on a duty / stand-by cycle; each pump will be sized for 100% duty. A second standby pump will be provided at this pumping station.	The foul sewer arrangement for the Substation development will be the same as for the Data Centre development.
Water	Water supply (operational phase)	The water system will be metered (in a similar manner to the existing adjacent data centre campus) to determine water consumption and facilitate leakage detection. To minimise sediment build up within the storm drainage network trapped inlets will be used at all points of entry and key manholes will have sumps to collect any material. A regular maintenance regime, including monitoring, will be put in place to remove any excess build-up of material.	The water supply for the Substation development will be the same as for the Data Centre development.
Water	Drainage (operational phase)	To minimise sediment build up within the storm drainage network trapped inlets will be used at all points of entry and key manholes will have sumps to collect any material. A regular maintenance regime, including monitoring, will be put in place to remove any excess build-up of material. The building design incorporates measures to minimise potential adverse effects due to flooding and drainage. Given the elevated level of the finished floor levels relative to the surrounding lands and the small cross sectional area and capacities of the watercourses, the risk of flooding to the site is therefore considered negligible. The proposed FFLs driven by the requirement of the Flood Risk Assessment and the surface water drainage will incorporate attenuation ponds and flow control devices. Drainage water will be discharged from the ponds at a rate controlled to suit the	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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		receiving surface water with a restricted discharge limit of 5.17 L/s/ha for impermeable areas, achieved through the use of flow control devices on the outlets of attenuation ponds, will mean there will be no adverse impact on flood risk within the catchment as a result of the development.	
Water	Flood risk (operational phase)	The building design incorporates measures to minimise potential adverse effects due to flooding and drainage. Given the elevated level of the finished floor levels relative to the surrounding lands and the small cross sectional area and capacities of the watercourses, the risk of flooding to the site is therefore considered negligible. The proposed FFLs driven by the requirement of the Flood Risk Assessment and the surface water drainage will incorporate attenuation ponds and flow control devices. Drainage water will be discharged from the ponds at a rate controlled to suit the receiving surface water with a restricted discharge limit of 5.17 L/s/ha for impermeable areas, achieved through the use of flow control devices on the outlets of attenuation ponds, will mean there will be no adverse impact on flood risk within the catchment as a result of the development.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Air quality and climate	Earthworks (construction phase)	• Carrying out earthworks in close proximity to sensitive receptors during dry and/or windy conditions will be avoided if reasonably practicable, having regard to programme and contracting arrangements for the relevant works. • Where this is unavoidable, appropriate water suppression to control dust will be used. • Spoil materials extracted from the site will be recycled elsewhere on site, when and where appropriate; • Plant will be fitted with appropriate dust control measures, such as enclosed conveyors, rubble chutes and water suppression, where reasonably practicable, to reduce potential dust emissions; • The storing of potentially dusty materials will be done away from site boundaries and/or potentially sensitive receptors • Spoil materials will be removed away from site as soon as is practicable, minimizing the need to stockpile potentially dusty material; • If unavoidable, spoil stockpiles will be regularly dampened down, sheeted or sealed before being removed from site at the earliest practicable opportunity; and • Slopes on stockpiles will be no steeper than the natural angle of repose of the material and will maintain a smooth profile.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Air quality and climate	Construction activities	• Designed/prefabricated materials will be used to reduce the need for grinding, sawing and cutting on site, wherever reasonably practicable; • Where cutting, grinding or sawing equipment is required, this will be done in conjunction with suitable dust suppression techniques, such as water sprays or local extraction, and undertaken in an area that is away from the sensitive receptors identified; • Bulk cement and other fine powder materials will be delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent the escape of material and overfilling during delivery • Manipulation of fine materials, such as the mixing of cement, will take place in an enclosed area that is remote from the site boundary and potentially sensitive receptors; and • Handling large quantities of potentially dusty material will be done so in an enclosed or shielded environment.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Air quality and climate	Transfer of dust making materials onto the local road network (construction phase)	• Wheel washing facilities will be provided at the site's points of egress off the site. The wheel wash will incorporate a rumble grid to dislodge accumulated mud and dust and be positioned so that there is an adequate area of hard surfaced road between it and the public highway; • Public roads and access routes adjacent to the site will be regularly cleaned using wet sweeping methods; • Vehicles leaving site with loose or potentially dusty material will be adequately sheeted; • Unsurfaced areas of the site will be regularly dampened down during periods of dry and/or windy conditions; • Speed limits of 5 mph on unsurfaced areas and 10 mph on hard surfaced areas will be mandatory on site; and • Vehicles entering the site with loose or potentially dusty material will be required to be adequately sheeted.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Air quality and climate	Climate (construction phase)	Due to relatively short-term of the construction phase and the limited nature of emissions of CO2 and N2O from construction related traffic and equipment, no specific mitigation measures are required.	As with the Data Centre development, no specific mitigation measures are required.
Air quality and climate	Air quality (operational phase)	The mitigation measures for the operational phase are already incorporated with the design of the proposed development. These mitigation measures are: • Selection process for generator plant took into consideration the lowest emission concentration of the possible plant options available; • The height of the generator stacks has been defined based on consideration of air quality impacts; • The generator testing regime will be undertaken in a manner so that only one single back- up generator will be tested at any one time (when not running for an emergency scenario); and • The load of the emergency back-up generators, when operating under emergency conditions, will be reduced accordingly to meet the power requirements at that time.	Not applicable
Noise and Vibration	Construction Phase	With regard to construction activities, all plant items used during the construction phase will comply with standards outlined in '*European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations*,' (1998). Reference should be made to 'BS5228: *Noise control on construction and open s i t*, which offers detailed guidance on the control of	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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Chapter Name	Potential Impact	Mitigation Measures- Data Centre	Mitigation Measures - Substation
		noise from construction activities. Normal construction working hours will be 07:00 to 19:00 hours and night-time working is not anticipated except for limited works, as may be required and agreed with the planning authority from time to time. The following various practices will be adopted during construction, including: • Limiting the hours during which noisy site activities are permitted by Meath County Council to 07.00 – 19.00 Monday – Friday and 07.00 - 13.00 Saturday; • Appointing a site representative responsible for matters relating to noise; and Establishing channels of communication between the contractor/applicant, Meath County Council and residents. Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These include: • Selection of construction plant with low inherent potential for generation of noise and/or vibration; • Erection of temporary barriers around items such as construction generators or high duty compressors. For maximum effectiveness, a barrier would be positioned as close as possible to either the noise source or receiver. The barrier would be constructed of material with a mass of > 7 kg/m_2 and should have no gaps or joints in the barrier material. As a rough guide, the length of a barrier would be five times greater than its height. A shorter barrier would be bent around the noise source, to ensure no part of the noise source is visible from the receiving location; and • Siting of noisy construction plant as far away from sensitive properties as permitted by site constraints.	
Noise & Vibration	Operational Phase	During the operational phase of the project, mitigation measures will be in form of design and layout of buildings and ensuring that any potential noise emitting plant is acoustically treated to prevent a noise nuisance at the nearest noise sensitive properties. As such, no additional noise mitigation measures are deemed to be required in the operational phase.	As with the Data Centre development, no additional noise mitigation measures are deemed to be required in the operational phase.
Material Assets	Construction and Operation	Co-ordination is on-going between the project team and the ESB, Meath County Council and other relevant service providers within the locality. This is to ensure a smooth construction schedule without disruption of essential services to the local and business community. Requirements arising from the interface include confirmation of the location of known local underground services.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Traffic	Construction phase traffic	A Construction Management Plan will be completed by the contractor, which will include construction traffic including both construction plant and materials deliveries being programmed to avoid peak traffic times on the surrounding road network. The anticipated hours of construction activity will be 07:00hrs – 19:00hrs Monday – Friday and 08:00hrs – 13:00hrs on Saturday. Therefore site operatives are projected to arrive before the AM Peak Hour (08:00 – 09:00). Furthermore, in the evening peak hour, approximately 50% of site operatives will depart outside of the evening peak hour, thus minimising the impacts on the surrounding road network and depart after the PM peak hour (17:00 - 18:00). HGV trips will arrive and depart the site at a uniform rate throughout the day, to avoid pressure on the morning and evening peak hour periods. The contractor has also set out a routing methodology for HGVs arriving to the site, minimising the use of the Kilbride Road by HGVs.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Traffic	Operational phase traffic	The new private access road will connect the Kilbride Road (L5028) to an internal priority controlled junction, with a separate access and egress road. The length of the new access road will be 50m (approx.). AECOM have liaised with Meath County Council Roads Department regarding the layout of the new access road, and it was agreed the road be designed to the following dimensions: • 7m wide carriageway; • 2m cycleway on both sides of the carriageway; • 2m footway on one side of the carriageway; and • Lighting columns on both sides of the carriageway. To the west of the internal priority controlled junction will be a security hut. Staff will be able to bypass the security arrangements and access the site via an express lane. Any visitors however will be subject to security clearance. The internal junction has been designed to act as a turning circle, should any large Heavy Goods Vehicles be rejected security clearance. The development proposals also include an upgrade of the Kilbride Road, from the CLN 1 – CLN 3 access to the Portan residential estate to the north of the proposed development. The proposed infrastructure works will ensure the carriageway from the southern tie-in to the northern tie - in is suitable for traffic movements to and from the proposed development.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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Chapter Name	Potential Impact	Mitigation Measures- Data Centre	Mitigation Measures - Substation
Transport	Operational phase - walking	The development proposals comprise of an extension to the Kilbride Road upgrade. This will include the construction of a new 2m wide footpath to tie into the existing footpath on the eastern side of the Kilbride Road, from the Kilbride Road Roundabout Junction to the site access into the existing data centre campus. The extension of the road upgrade will provide pedestrian access to the CLN 5 and CLN 6 Data Centre building. The footpath has been designed as per the DMURS standards as follows: • A 2.0m wide footway to be provided on the eastern side of the Kilbride Road from the CLN1 – CLN3 site access to the CLN5 – CLN6 site access; • A 2.0m wide footway to be provided on the western side of the Kilbride Road from the CLN5 – CLN6 site access; to the northern junction with the existing residential estate; and • An uncontrolled pedestrian crossing to be installed between the 2 no. footways on either side of the carriageway.	Not applicable
Transport	Operational phase - cycling	As part of the Kilbride Road upgrade, the proposal include for the provision of an off-road cycle track on both sides of the carriageway. The cycle track has been designed as per the National Cycle Manual (2010) with the following parameters: • 2.0m cycle lanes on both sides of the site access road; • Cycle lane brought across mouth of priority site access junction; • Stop Sign of the site access to be positioned away from the cycle desire line; and • Red coloured surface indicating on road cycle lane commencing 20.0m in advance of vehicular access to Mick Brennan's property and finishing 5.0m after the CL5 & 6 access.	Not applicable
Waste	Construction phase waste	Mitigation measures proposed to manage impacts arising from waste generated during construction of the proposed development are summarised below and will be described in more detail in the C&D WMP: • Implementation of a C&D WMP for the proposed development which will be completed in accordance with the methodology outlined in the '*Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*' published by the Department of Environment, Heritage & Local Government in July 2006. The implementation of appropriate Waste Management Plans will ensure the proper management and recycling of wastes generated by the construction of the proposed development. Implementation of the C&D WMP will also check that the management of waste at the proposed development is undertaken in accordance with the Eastern-Midlands Regional Waste Management Plan 2015-202. • On site segregation of all waste materials into appropriate categories including: – Top-soil, subsoil, bedrock – Concrete, bricks, tile, ceramics, – Plasterboard – Asphalt, tar and tar products – Metals – Dry Recyclables e.g. cardboard, plastic, timber • All waste will be stored in skips or other suitable receptacles in a designated area of the site; • Wherever possible, leftover materials (e.g. timber off cuts) and any suitable demolition materials will be reused on-site; • Uncontaminated excavated material (top-soil, sub soil, etc.) will be re-used on site in preference to importation of clean fill, where possible; • Based on the findings of the environmental site assessment completed on the proposed development site (refer to Appendix A.6.8), soils that may require disposal during the construction phase of the development meet the requirements of many waste permitted sites which are permitted to accept "clean soil and stone from greenfield sites" and no special handling or disposal requirement need be applied; • Where possible a high percentage of waste leaving the proposed development will be recycled or recovered, with the exception of those waste streams where appropriate recycling facilities are currently not available; • All waste leaving site will be recycled or recovered where practicable; • Waste records and copies of relevant documentation will be maintained; • Subject to the approval of the C&D Waste Manager, the Contractor will investigate whether nearby construction sites may lawfully accept fill material, to both minimise the costs of transport and to reuse as much material as possible; and • Scheduled waste audits will be carried out by a nominated and suitably qualified C&D Waste Manager.	The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Waste	Operational phase waste	The waste generated during the operational phase of the proposed development will be primarily limited to activities in the administration building, with smaller quantities of waste generated across the remainder of the data centre buildings and maintenance operations. Mitigation measures proposed to manage impacts arising from waste generated during operation of the proposed development are set out below:	The mitigation measures outlined for the Data Centre development also apply for the Substation development.

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		• On-site segregation of all waste materials into appropriate categories including:
		  ꟷ organic waste
		  ꟷ cardboard and paper
		  ꟷ plastic
		  ꟷ glass
		  ꟷ metals
		  ꟷ mixed non-recyclables
		• All waste materials will be stored in bins or other suitable receptacles in a designated, easily accessible area of the proposed development;
		• Where possible a high percentage of waste leaving the proposed development will be recycled, with the exception of those waste streams where appropriate recycling facilities are currently not available;
		• Any waste classed as hazardous will be stored in a designated area and will be removed off site by a licensed hazardous waste contractor;
		• All waste leaving the proposed development will be transported by suitable permitted contractors and taken to suitably licensed or permitted facilities; and
		• Waste records and copies of relevant documentation will be maintained.	

Cultural heritage	Archaeological Works	Any known archaeological remains which will be impacted by the proposed development will be subject to a programme of archaeological mitigation, with the agreement of the Department of Culture, Heritage and the Gaeltacht (DoCHG)/National Monuments Service (NMS). A programme of mitigation (archaeological excavation/monitoring and recording) will take place in any identified archaeological areas which will be impacted by the scheme (**D**) – (**K**) (Fig. 12.2). Sections through townland boundaries **A** – **C** will also be archaeologically excavated and recorded. Archaeological testing or monitoring will be carried out in areas identified in the construction impacts section above where the proposed development has the potential to impact upon archaeological remains (e.g. building footprints, roadways and areas of deep landscape cuttings such as attenuation ponds, interconnecting underpass), taking into account the depth of impact of the particular element of the proposals and the depth of soil above the archaeological horizon. All archaeological works (which will be agreed by the Archaeological Consultant and the NMS) will be carried out in compliance with the National Monuments Acts 1930 – 2004 (and Policy and Guidelines on Archaeological Excavation (Department of Arts, Heritage Gaeltacht and the Islands, 1999). A suitably qualified and licensed Archaeological contractor will be appointed to carry out the archaeological fieldwork. Relevant licenses will be acquired from the DoCHG/NMS and the National Museum of Ireland (NMI) for archaeological works, which will be carried out in accordance with an Over-Arching Method Statement for Archaeological Works prepared by the Archaeological Consultant and agreed with the NMS. If unexpected archaeological remains or artefacts are discovered during construction work, work in that area will cease and the area will be protected. An unexpected finds procedure will be included in the Overarching Method Statement for archaeology. The Archaeological Consultant and NMS will be notified, and the unexpected find protocol will be implemented.	No known archaeological features were found under the footprint of the proposed Substation. The mitigation measures outlined for the Data Centre development also apply for the Substation development.
Landscape	Visual Impact	The key mitigation aspects of the mitigation proposals are to screen key views from the east, north and south in the short to medium term and include the following: *East Boundary* – Kilbride Road (L5028): The majority of the [Proposed Development] is located away from the public road L5028 utilising natural mitigation measures such as distance from the potential observer as well as screening effects of mature vegetation by locating the development behind existing mature hedgerows. The screening provided by the existing vegetation is to be further enhanced by erection of 3m high earthen mounds with native planting in the majority of locations along this boundary and additional clusters of native trees proposed between the earthen mound and the development itself. The only section of the development that will be located adjacent to the local road L5028 is situated at the north-eastern corner of the main development site, north of the proposed site entrance. While it is proposed to remove a section of an existing hedgerow in this location, there is visual screen planting and a 3m high earthen mound proposed at this location to screen the development in views from this section of the road. *North Boundary* – The development is located behind an existing network of fields and mature hedgerows providing good screening in views from the north. Closer to the actual development location, the screening effects will be further enhanced by erection of 3m high earthen mounds planted with native hedges and trees as well as areas of visual screen planting around the proposed substation and clusters of native trees between the existing boundary hedgerows and earthen mounds located further into the site. *West Boundary* – The development is located behind an existing network of fields and mature hedgerows providing good screening in views from the west. Closer to the actual development location, the screening effects will be further enhanced by	All landscape mitigation measures are inherent in the proposed Data Centre application.

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erection of 3m high earthen mounds planted with native hedges and trees as well as areas of visual screen planting around the proposed substation and clusters of native trees between the existing boundary hedgerows and earthen mounds located further into the site.

South Boundary – It is proposed to erect a 3m high earthen mound planted with native shrubs and trees along the majority of this site boundary, the remainder of this boundary will be planted with clusters of native trees.

Protection of Existing Trees and Hedgerows during Construction

Sufficient protection for trees and hedgerows to be retained is to be provided in areas close to construction works in accordance with BS 5837:2012.

Colour, Material and Lighting

The selection of material and colour for the proposed building facades has been an important consideration which has been taken into account at design stage. Materials and colours will determine how well a building will integrate into its surrounding environs and are therefore an integral part of visual mitigation measures. At the start of the design process it is therefore required to determine if a building is to integrate or to stand out for marketing or other reasons. The selection of appropriate colours depends also on the topography of the study area and how the development will be seen in the majority of views, i.e. against the land from elevated viewpoints or against the sky at a close distance or from viewpoints at a similar level to the proposed ground floor level. It was decided upon at a very early stage in the design process that the Proposed Development is to integrate into its environs. The selected materials and colours of the proposed building structures have been chosen to achieve this effect, and are detailed in Chapter 2.

The lighting design along footpaths, cycle paths and roads and the location and type of luminaires used throughout the Proposed Development will aid in minimising the effects of sky glow, glare and spilling of light and focus on task light, which will illuminate areas actually required to be lit.

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