CLIENT: Castlelost Flex Gen Limited

PROJECT: Site Condition Report

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Halston Environmental & Planning Limited
IHub Building
Westport Road
Castlebar
Co. Mayo
Ireland
F23 K162

Tel. +353 (0)94 9010111

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1 DESCRIPTION OF THE PROJECT

Castlelost Flex Gen Limited intend to construct a gas-fired reserve generator of 275MW electrical capacity. The Open Cycle Gas Turbine (OCGT) power plant will combust natural gas supplied from the Gas Networks Ireland (GNI) transmission system. The proposal includes the installation of five (5no.) dry low emission (DLE) gas turbines, associated stack(s), raw water/fire water tank, fire water retention basin, back-up fuel tank, emergency generator, gas receiving station (AGI), low, medium and high voltage transformers, customer control room, and all ancillary electrical plant and delivery systems. GNI will separately manage the process of delivering the underground natural gas pipeline to the proposed site to serve the generator. The plant will export power to the national grid via a new GIS electricity substation which will be built adjacent to the Castlelost Flex Gen Power Plant.

2 RECEIVING ENVIRONMENT

The site is located 2km southwest of Rochfortbridge and 3km east, north-east of Tyrrellspass, Co. Westmeath. The development lands are greenfield. The M6 motorway runs along the site's southern boundary. There are existing residential properties bordering the site boundary to the northeast, northwest and west. The primary access to the site is via the regional road (R446) which borders part of the development lands to the north.

3 TOPOGRAPHY

The M6 motorway defines the southern boundary of the proposed development lands and the R446 (N6) provides the proposed main access point to the site. The topography in the general area of the site gently slopes from the agricultural pastures to the north towards peatlands, beyond the M6 to the south /southeast. The highest feature in the general area of the site is Croghan Hill, which is located approximately 6.3km southeast of the site. In terms of the proposed development lands, topography is best described as as gradually sloping from higher ground in the west and north to lower ground in the southeast. The lands within the development boundary gently rise from the lowest point of 93.5m OD in the southeast, close to the boundary with the M6 motorway, to 107.1m OD in the west of the site and 105m OD and 107m OD (at the proposed main entrance to the development lands from the R446).

Figure 3.1 Ground Elevation Contours in the General Area of the site

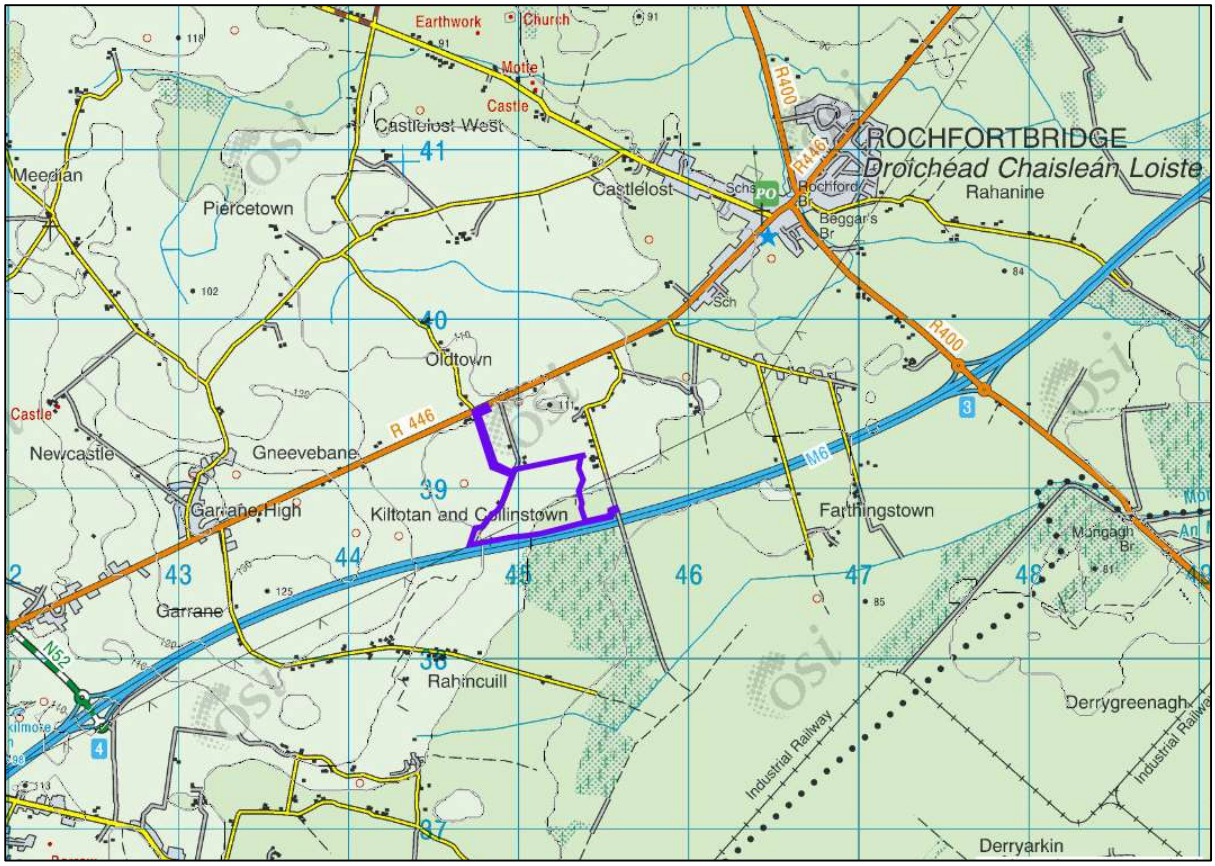
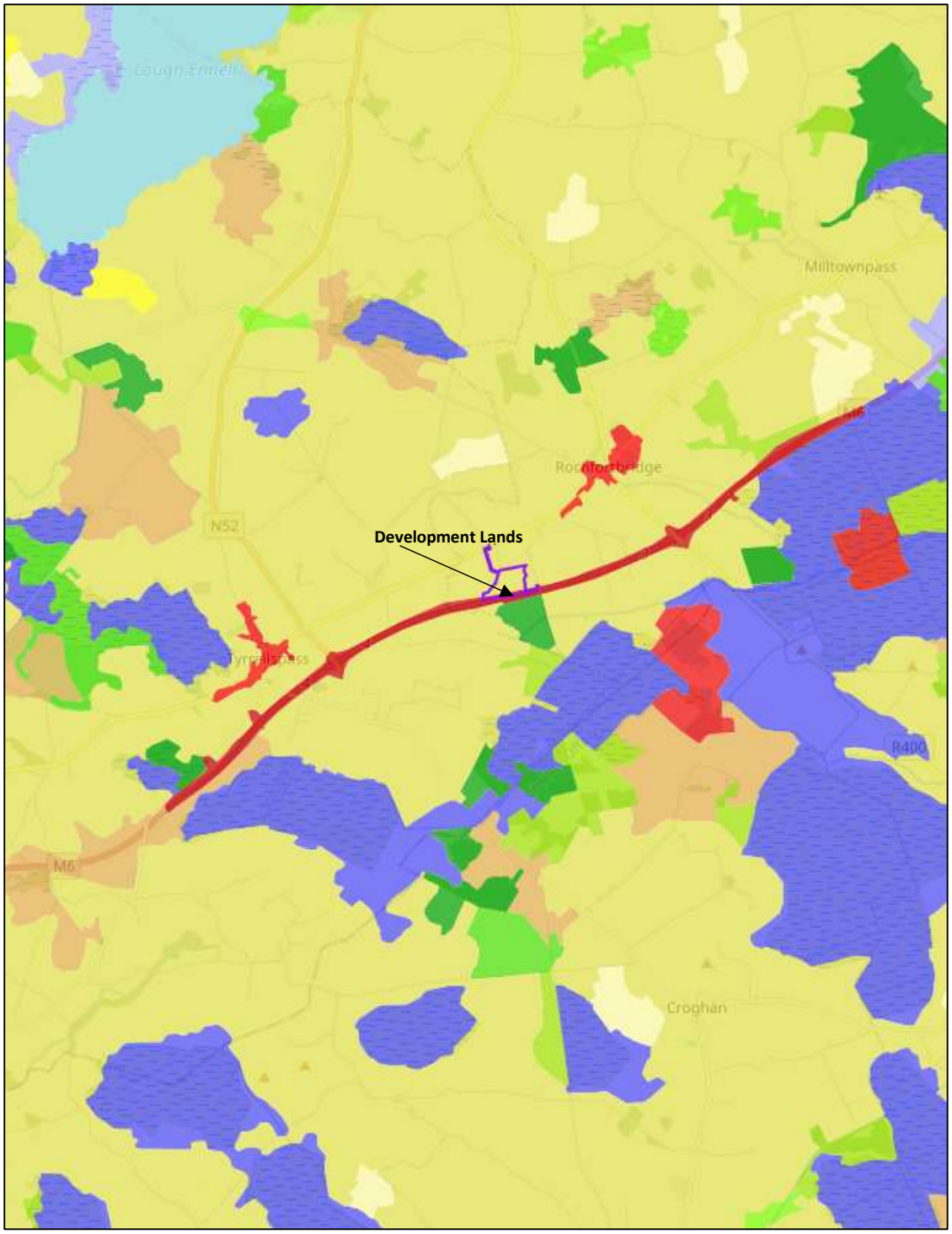


Figure 3.2 Ground Elevation Contours at the proposed development site

4 HISTORICAL LAND USE

Review of historical aerial imagery and mapping indicates that the site was historically used as agricultural land (greenfield). There are areas of extensive cutaway bogs, quarries and forestry located to the south and beyond the M6 motorway. Lands in the general area of the site are predominantly agricultural pastures with some arable lands.

Figure 4.1 Corine Land Cover (EPA 2018)



5 SOILS AND GEOLOGY

5.1 SOILS

The current land use is described as agricultural pastures depicted by the yellow colour on Figure 5.1. The Geological Survey of Ireland's *'The Quaternary geology of Ireland – Sediments Map'* is a representation of the superficial geology of Ireland at a scale of 1 to 50,000. The map shows the sediments mapped within 1 metre of the surface which were laid down during the Quaternary period as well as bedrock at or close to the surface, water bodies and made ground.

The mapped sediments underlying the site are describe as *"Cut over raised peat"* and *"Till derived from limestones"*. The soils within the development lands are classed as fine loamy drift with limestones (Eton association) of moderate drainage with cutover peat near the southern boundary. Subsoils are classed as limestone tills (Carboniferous) and peat.

The bedrock geology underlying the site is mapped on the GSI 1:100,000 bedrock formations map. This data shows that the bedrock geology underlying the development lands is mapped as Waulsortian Limestones. Waulsortian limestones are described as Massive unbedded lime-mudstone and are dominantly pale-grey, crudely bedded or massive limestone. No bedrock outcrops are identified by the GSI. It is envisaged that bedrock is close to the surface in the extreme southwestern area of the site. This is supported by GSI vulnerability classification of high in this area and the motorway (M6 cutting in the general area of the electricity tower (no. 150) which is located adjacent to the motorway.

Figure 5.1 Aerial view of motorway (M6) rock cutting

Figure 5.2 Motorway (M6) rock cutting (west of development lands)

Figure 5.3 Quaternary Deposits

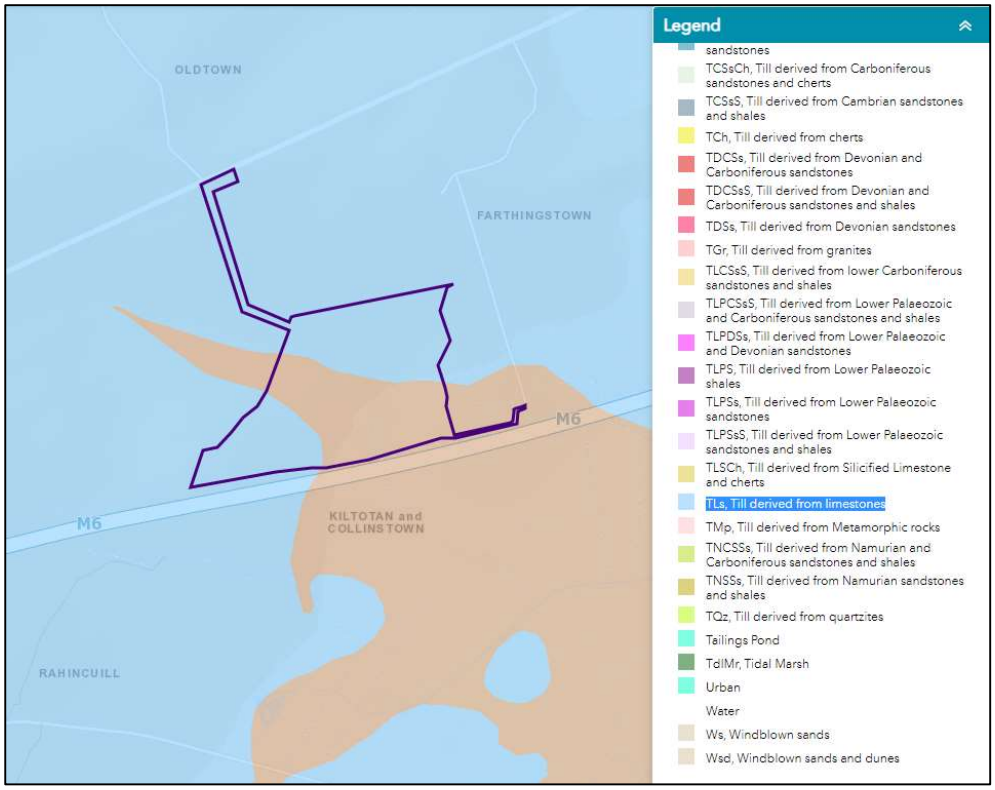
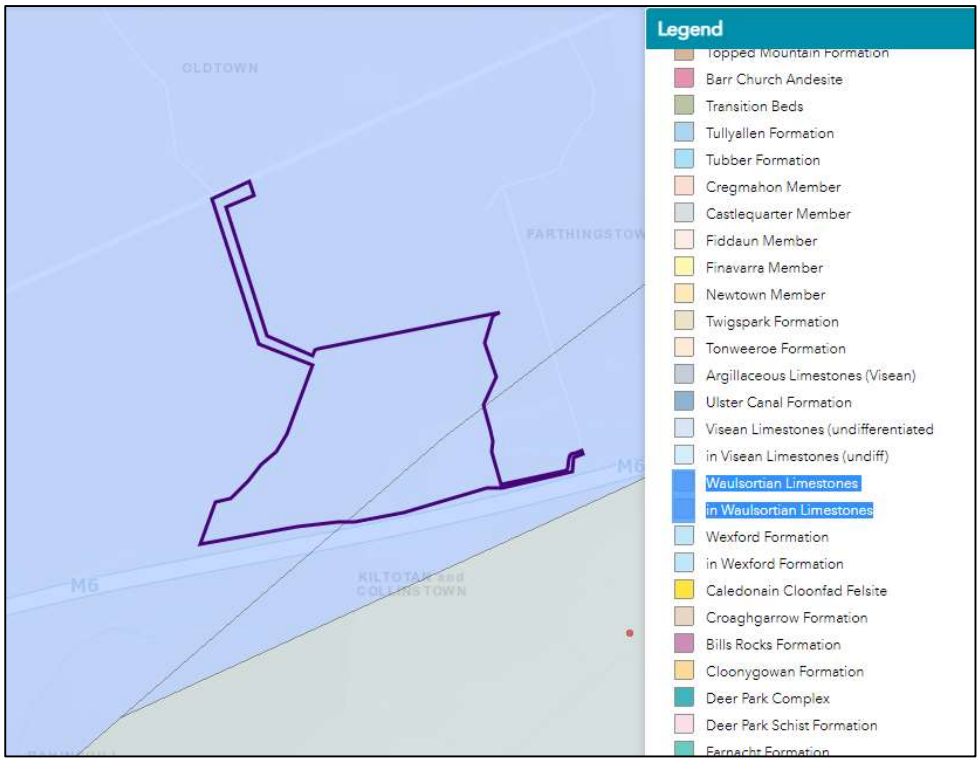


Figure 5.4 Bedrock Geology Map



As part of site assessment works a number of trial pits were excavated across the development lands on the 13th of July 2021 to depths of c.2.7m below ground level (bgl)

for the purposes of foul and storm drainage design. No bedrock was encountered in any of the trial pits excavated. No groundwater was observed within the trial pits. The soils were described as silty clay containing an abundance of cobbles and boulders and no evidence of mottling. Photographs of the trial pits are presented in Figures 5.6-5.9.

Figure 5.5 Trial pit in eastern area of the site

Figure 5.6 Trial pit in eastern area of the site

Figure 5.7 Trial Pit towards the northern area of the site

Figure 5.8 Trial Pit in western area of the site close to farm shed

Figure 5.9 Trial Pit in eastern area of the site – arisings from pit shown

5.2 KARST

Karst landscapes develop through the process of karstification, this occurs primarily in soluble rocks such as limestone and dolomite. Karstification takes place due to calcite dissolution from meteoric water. As rain descends through the atmosphere it picks up additional CO_2 causing a chemical reaction within the soluble limestone, leading to the development of numerous surface and subsurface features. There are no karst features within or near (within 5km) the site.

5.3 GEOLOGICAL HERITAGE

The Geological Survey of Ireland in conjunction with the Geoparks network and GSNI have undertaken the programme *"Geoheritage"* dedicated to the protection and promotion of regions and features of geological importance throughout the country. The sites are identified as County Geological Sites for inclusion in County Development and Heritage Plans. There are no sites of geological interest within or close to the development boundary.

6 HYDROGEOLOGICAL AND HYDROLOGICAL SETTING

6.1 GROUNDWATER BODY

The development lands are located in the Athboy groundwater body (WFD site code IE_EA_G-001). According to the EPA, the GWB is classed as having "good" status (2013-2018). The GWB extends from Navan in the northeast to Tyrrellspass and Rochfortbridge

in Westmeath. The area is typical of the midlands of Ireland with little relief. There are some isolated hills which rarely rise above 150 m OD. In general, the elevation falls from northwest to southeast, reflected in the overall drainage pattern. The region shows a distinctive topography, a typical product of the last glaciation. The land surface is undulating, with large hummocks of glacial drift, deposited under the ice as moraines.

Typically, in a locally important aquifer such as this the majority of groundwater flow is expected to occur in an upper broken and weathered zone, which is considered to be about 3m thick. Additional flows are commonly found in the upper 10m where groundwater flows along fracture networks. Occasionally deeper isolated groundwater flows are found in cavities which may have been layers or pure limestone solutionally enlarged by karstification. Diffuse recharge appears to be the dominant process for water to reach the aquifer. The slope and the thickness and permeability of the soil and subsoil will determine the amount of recharge reaching the aquifer. Due to the generally low permeability of the aquifer a high proportion of the recharge will then discharge rapidly to surface water courses via the upper weathered layers of the aquifer, effectively reducing the available groundwater resources in the aquifer. This GWB discharges to the overlying rivers and streams. In some instances, there may be discharge to the adjacent Trim GWB to the east. Discharge to rivers will be in the form of baseflow. Dry Weather Flows (DWF) are moderate to low. Data collected by the EPA for this GWB shows the water is generally Hard (250-350 mg/l $CaCO_3$) with high Electrical Conductivity (600-700 µS/cm).

6.2 BEDROCK AQUIFER

An aquifer is defined as a geological formation that is capable of yielding significant quantities of water. Aquifers generally consist of clean, coarser geological materials where permeability has developed in response to a variety of geological processes. There are a variety of aquifer types in Ireland. Limestone, dolomite, sandstone and volcanic strata are bedrock aquifers and sands and gravels are unconsolidated aquifers. The aquifer beneath the proposed development lands is classed as a *"locally important aquifer – bedrock which is moderately productive only in local zones"*.

In Ireland the entire land surface is divided into four vulnerability categories - extreme (E), high (H), moderate (M) and low (L) - based on geological and hydrogeological factors. The term *'vulnerability'* is used to describe the ease with which groundwater may be contaminated by human activities (DELG et al., 1999). The vulnerability of groundwater depends on the time of travel of infiltrating water (and contaminants), the relative quantity of contaminants that can reach the groundwater and the contaminant attenuation capacity of the geological materials through which the water and contaminates infiltrate. These

are more specifically determined at the site by the type and permeability of the subsoils, the thickness of the unsaturated zone through which the contaminant moves and the recharge type, whether point or diffuse. The classification guidelines, as published by the GSI, are given in Table 6.1 below. It shows that the less permeable and thicker the overburden overlying an aquifer is, the lower the vulnerability of the aquifer to contamination.

Table 6.1 GSI Groundwater Vulnerability Guidelines

Vulnerability Rating	Hydrogeological Conditions				
	Subsoil Permeability (Type) & Thickness			Unsaturated Zone	Karst Features
	High Permeability (sand/gravel)	Moderate permeability (e.g. sandy subsoil)	Low permeability (e.g. clayey subsoil, clay, peat)	(sand/gravel aquifers only)	(<30m radius)
Extreme (E)	0 – 3.0m	0 – 3.0m	0 – 3.0m	0 – 3.0m	-
High (H)	>3.0m	3.0 – 10.0m	3.0 – 5.0m	>3.0m	N/A
Moderate (M)	N/A	>10.0m	5.0 – 10.0m	N/A	N/A
Low (L)	N/A	N/A	>10.0m	N/A	N/A

Notes: (1) N/A = not applicable

(2) Precise permeability values cannot be given at present

(3) Release point of contaminants is assumed to be 1-2m below ground surface.

Groundwater vulnerability across the vast majority of the development lands is classed as *'Moderate'* vulnerability. An area of high vulnerability is shown to be present in the southwestern corner of the site and near the proposed site entrance at the R446.

Figure 6.1 Aquifer Classification

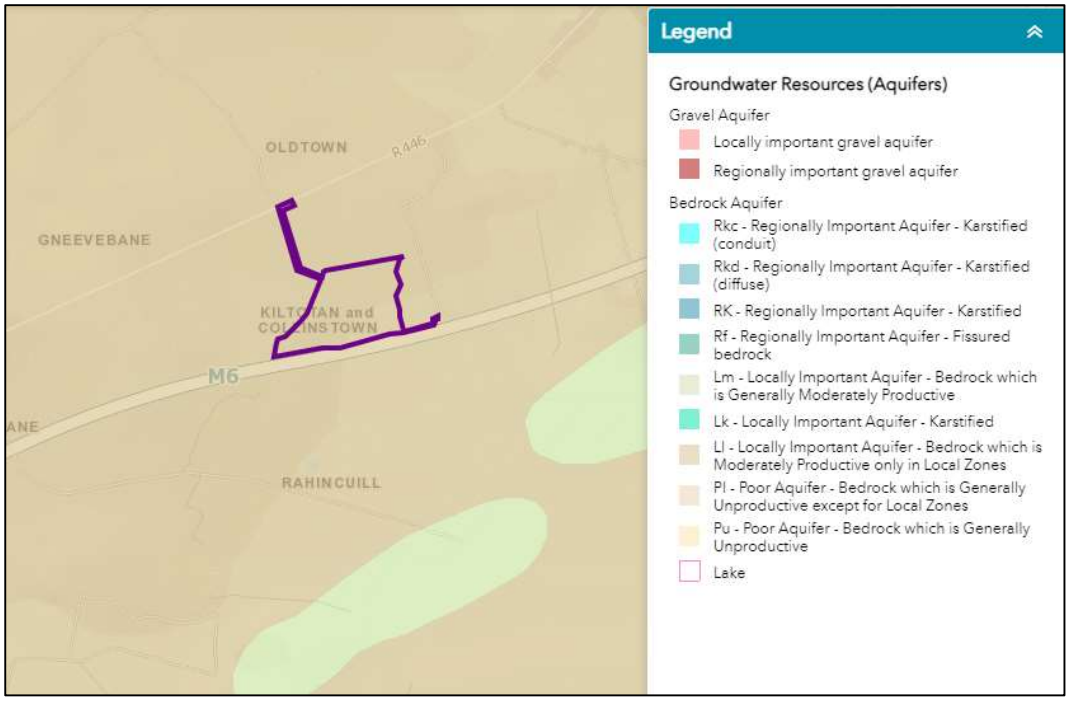


Figure 6.2 Aquifer Vulnerability

6.3 GROUNDWATER FLOW

No field data was available to determine groundwater flow direction or gradient across the site. In the absence of site-specific data, it is assumed that groundwater flow direction

will coincide with topography and be to the east/southeast towards the Mongagh and Castlejordan Rivers.

6.4 WATER REGIONS /CATCHMENT IDENTIFICATION

The EU Water Framework Directive (2000/60/EC) (WFD) establishes a framework for the protection, improvement and management of surface water and groundwater. The Catchment datasets are built on clusters of subcatchments (derived from river waterbody polygons and the subcatchment dataset are built on clusters of river water body polygons and are entirely contained within the Catchment polygons datasets. The proposed development lands are located within the Boyne WFD Catchment, the Yellow[Castlejordan]_SC_010 subcatchment and the Castlejordan_020 River Sub Basin.

The Boyne catchment includes the area drained by the River Boyne and by all streams entering tidal water between The Haven and Mornington Point, Co. Meath, draining a total area of 2,694km². The largest urban centre in the catchment is Drogheda. The other main urban centres are Navan, Trim, Kells, Virginia, Bailieborough, Athboy, Kinnegad, Edenderry and Enfield. The total population of the catchment is approximately 196,400 with a population density of 73 people per km². This catchment is characterised by an undulating landscape in the south which changes to a more hummocky, drumlin topography (steep-sided, lenticular hills) in the north. The catchment is underlain by metamorphic rocks in the north and limestone bedrock in the centre and south of the catchment. There are extensive sand and gravel areas in this catchment, particularly along the upper reaches of the Boyne.

Figure 6.3 WFD Catchment (Boyne (07))

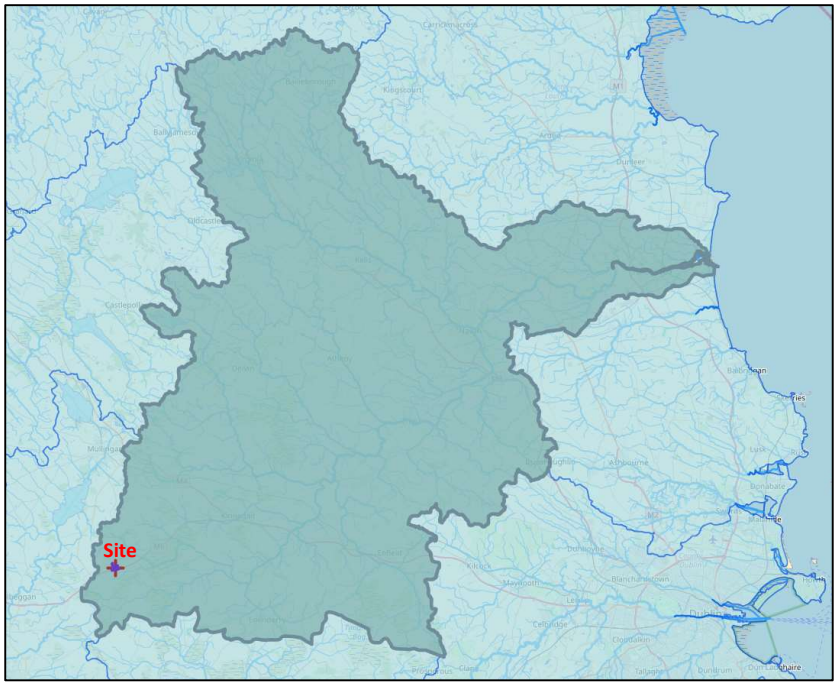


Figure 6.4 WFD Subcatchment (Yellow[Castlejordan]_SC_010))

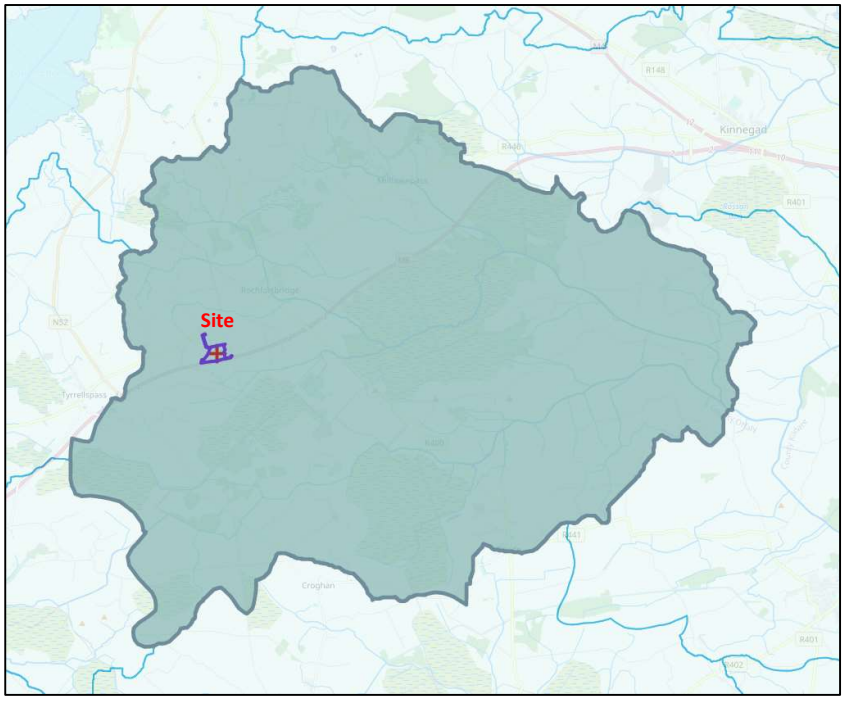
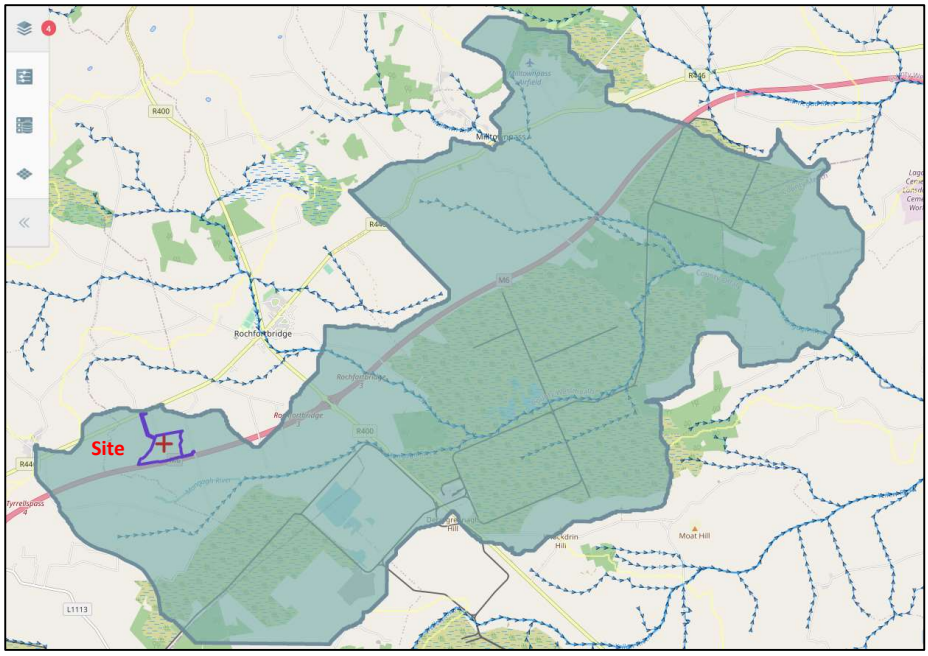


Figure 6.5 WFD River Sub Basin (Castlejordan_020)



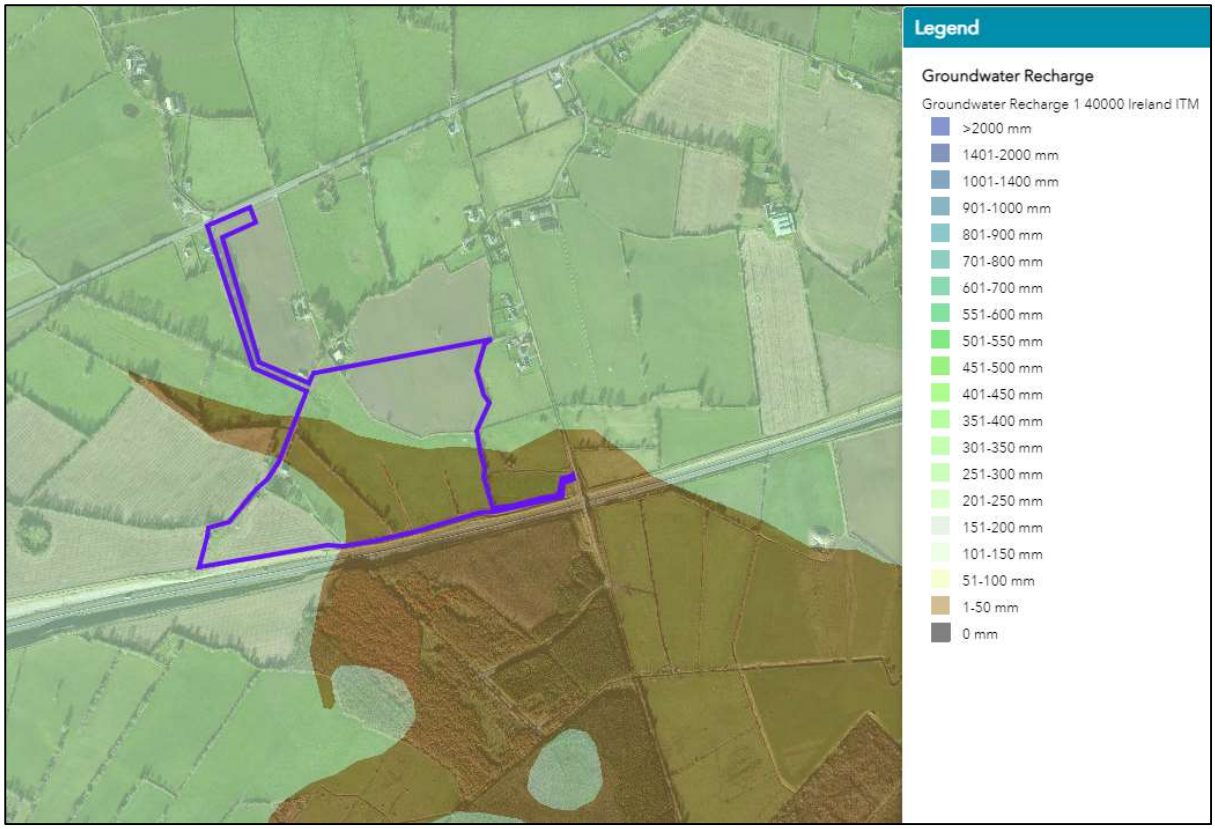
6.5 GROUNDWATER RECHARGE

Groundwater recharge is the primary method by which water enters an aquifer. This occurs mainly through downward movement of surface water to groundwater. Both point and diffuse recharge occur. Diffuse recharge occurs via rainfall percolating through the permeable subsoil and rock outcrops. Point recharge occurs by means of swallow holes, collapse features/dolines, and where flow is concentrated in the epikarst.

The groundwater recharge in a region depends mainly on the precipitation change during the major recharge season. Data acquired by the Geological Survey of Ireland shows the average recharge rate for the area in brown to be 20mm/year with a recharge coefficient of 4%. The hydrogeological setting for the areas highlighted in brown are described as having "Moderate permeability subsoil, cut peat".

The southwestern area of the site, shown in light green, is shown to have an average recharge rate of 319mm/yr with a recharge coefficient of 60%. Northern areas of the site, again are shown in light green, are shown to have an average recharge rate of 319mm/yr with a recharge coefficient of 60%. The hydrogeological setting for the areas shown in green are described as having "Moderate permeability subsoil overlain by poorly drained (gley) soil".

Figure 6.6 Groundwater Recharge



6.6 GROUNDWATER WELLS AND SPRINGS

According to the GSI, there are a number of identified wells at and in the vicinity of the development lands. Details of the wells are tabulated in Table 6.2 and illustrated in Figure 6.7. Review of historical OSI mapping also shows the location of three "wells" in the vicinity of the development lands. These are depicted using red circles on Figure 6.7.

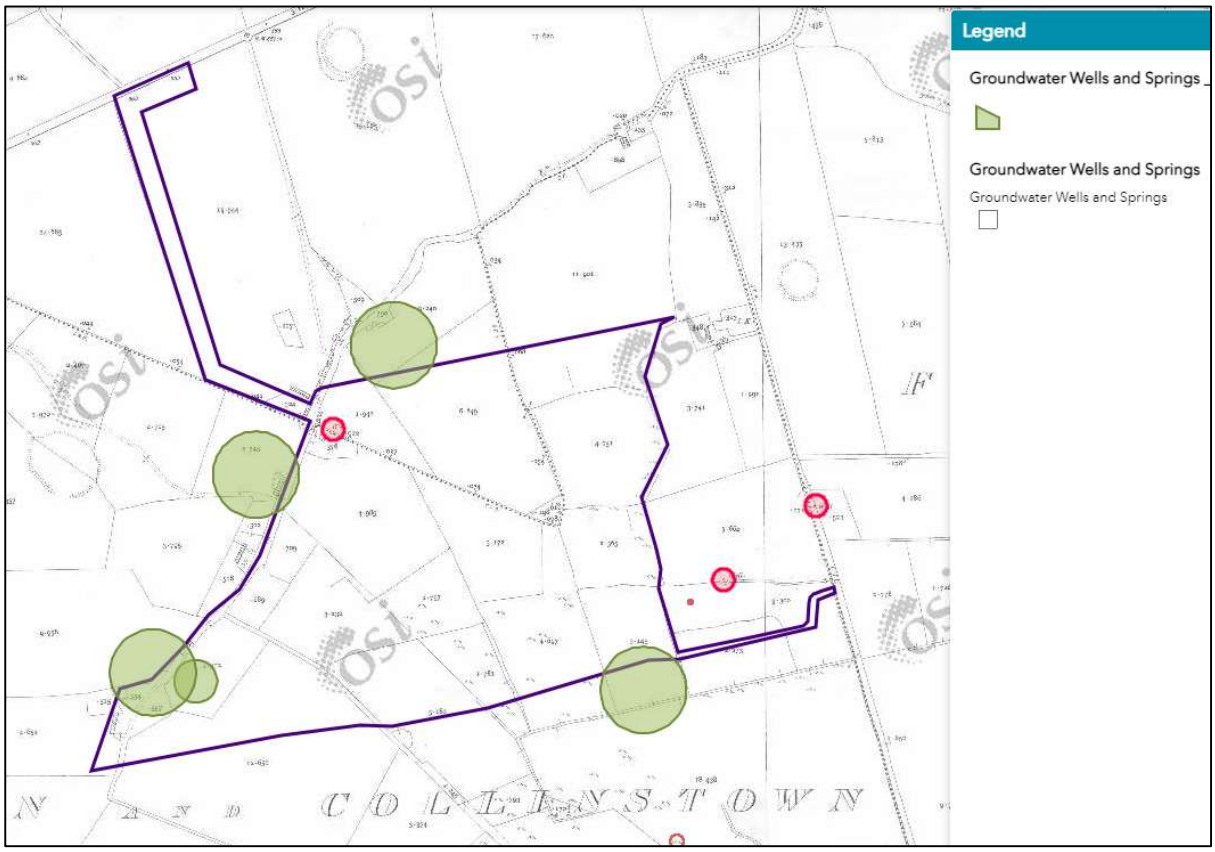
Table 6.2 GSI Groundwater wells and springs

GSI Name	Well Type	Drill Date	Easting	Northing	Depth	Depth to Rock	Yield, m^3/d	Casing Ø (mm)
2323SEW200	Dug well	August 8, 1996	245350	238760	1.6	NS	NS	NS
2323SEW201	Dug well	August 8, 1996	245060	239160	1.7m	NS	NS	NS
2323SEW202	Borehole	August 13, 1998	244830	238770	60.9	12.2	76.3 (moderate)	150mm
2323SWW100	Dug well	August 14, 1996	244780	238780	1.6	NS	NS	NS
2323SWW101	Dug well	August 14, 1996	244900	239010	1.5	NS	NS	NS

In terms of the site applications boundaries associated with each of the three projects, there are no groundwater wells impacted by the siting of infrastructure associated with

the three projects. This was confirmed following the desktop study by undertaking a ground truthing survey.

Figure 6.7 Groundwater wells and springs



7 HYDROLOGY

The development lands are located within the hydrological catchment of the Mongagh River. The proposed development lands are located approximately 500m to the north of the water course. The Mongagh River flows east into the River Boyne with its associated European sites, the River Boyne and River Blackwater SAC (Site Code 002299) and the River Boyne and River Blackwater SPA (Site Code 004232), which are located over 20 river km to the northeast of the proposed development lands.

There are no significant hydrological features identified within or near the site. However, some surface water drains (drainage ditches) were identified within the site boundary. The drainage ditches originate within the site boundary and run in a southerly direction before flowing in culvert under a gravel surfaced access road (farmers lane) and then into a TII drain that runs along the crest of the motorway cutting in an easterly direction within an oversized grassy channel. The TII drain meets a headwall and culvert that goes under the M6 in a southerly direction. Waters from the drain discharge to the Mongagh River to the south. On the various dates when site walkover visits were undertaken during the

months of June to August 2021, the drainage ditches within the boundary of the development lands were found to be dry and overgrown with vegetation.

Figure 7.1 Site location map showing local surface water features

Figure 7.2 Site location map showing local surface water features

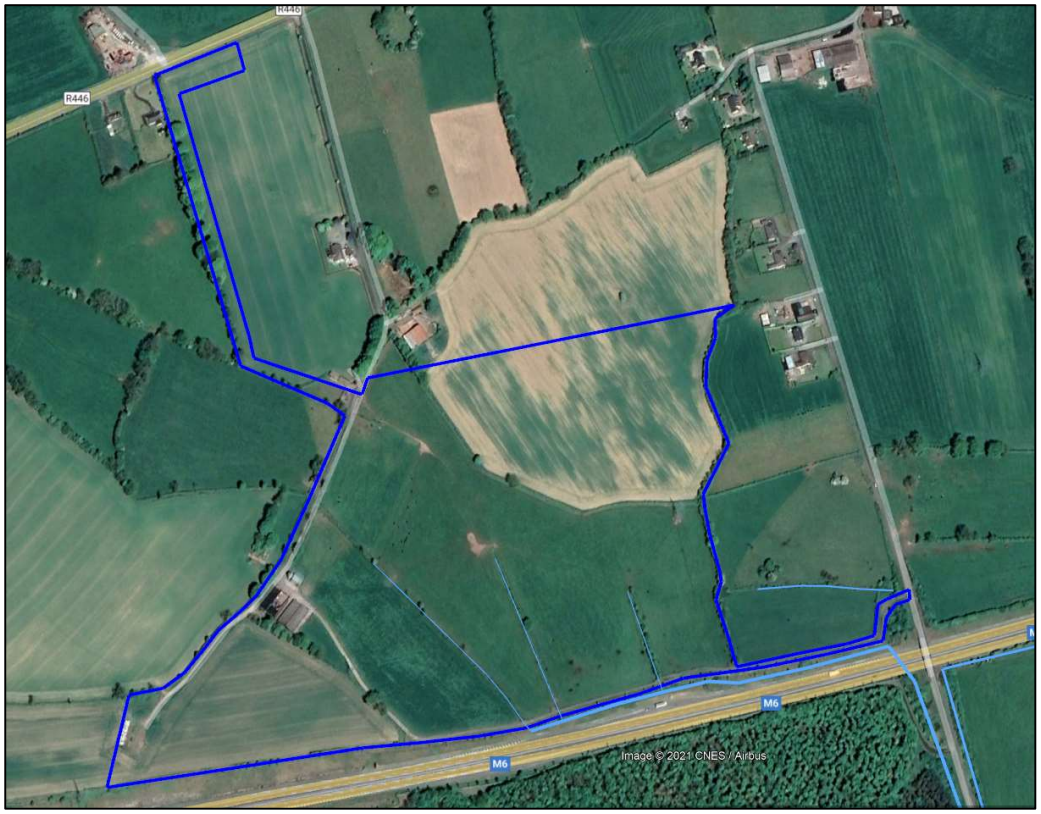


Figure 7.3 Photograph of drainage ditch within development lands

Figure 7.4 Photograph of drainage ditch within development lands - dry

8 FLOOD RISK

A flood risk assessment (FRA) was prepared and is provided in Appendix 7.1 of the EIAR supporting the planning application. The FRA was undertaken to inform the future development of the site as it relates to flood risk. The development lands are shown to reside in Flood Zone C and are at low risk of inundation from fluvial, coastal and groundwater sources and is appropriate for development at this location.

9 ECOLOGICAL PROTECTED AREAS

There are No Natura 2000 sites (European Sites) are within or immediately close to the development lands. The nearest European sites to the development lands are associated with Raheenmore Bog and include the Raheenmore Bog SAC (Site Code 000582), which is located just over 5.79km to the south. Other designated ecological sites within a 15km radius of the site are as follows:

- Cloncrow Bog (New Forest) NHA, Site Code 000677, is located 3km west of the development lands.
- Raheenmore Bog SAC and NHA, site code 00582, is located approximately 5.79km south of the development lands.

- Lough Ennell SAC and NHA, site code 000685, is located 6.25km northwest of the development lands.
- Split Hills and Long Hill Esker SAC, site code 001831 is located 7.19km west of the development lands.
- Wooddown Bog SAC, site code 002205, is located approximately 14.33km northwest of the development lands.
- Lough Ennell SPA, site code 004044, is located 6.94km northwest of the development lands.
- Milltownpass Bog NHA, site code 002323, is located approximately 7km northeast of the development lands.
- Black Castle Bog NHA site code 000570 is located 12.5km southeast of the development lands.
- Grand Canal NHA, site code 002104, which is located approximately 10km south of the development lands at its closest point.
- Royal Canal NHA, site code 002103, which is located 11.8km north east of the development lands at its closest point.
- Daingean Bog NHA, site code 0020033, which is located 11.4km south of the development lands.
- Rahugh Ridge (Kiltober Esker), NHA, which is located 6.7km southeast of the development lands.
- Murphys Bridge Esker NHA, site code 0017756, which is located 9.4km southeast of the development lands.
- Nure Bog NHA, site code 001725, which is located 8km northwest of the development lands.

10 NOISE

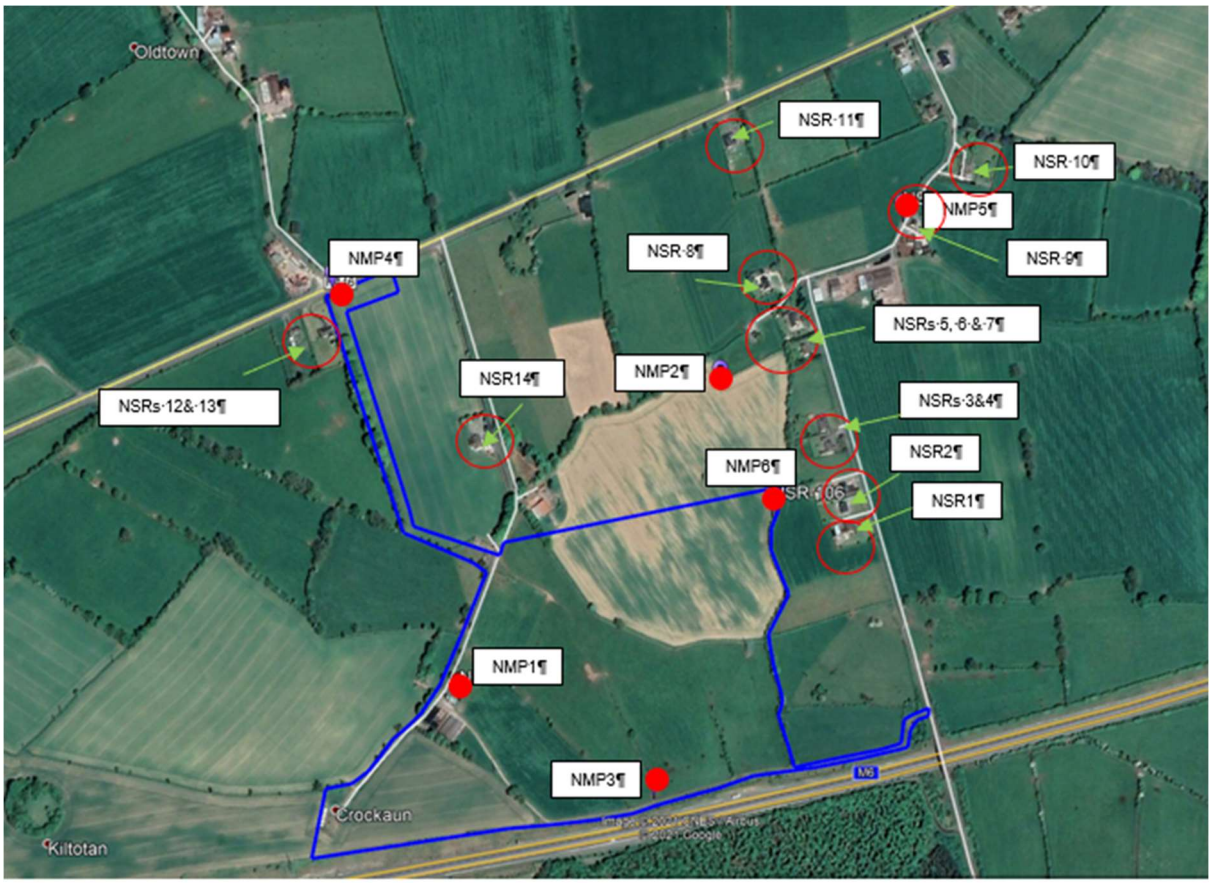
The receiving sound environment or existing soundscape has been characterised by field survey and desk-based study. A site reconnaissance visit was completed on 8th July 2021 to inform the overall noise monitoring programme. The programme was designed to establish ambient sound levels at the nearest Noise Sensitive Receptors (NSRs) to the overall main Development Site and to the proposed options for the gas supply line installation. Noise surveys were completed on various dates between 5th – 29th July 2021.

Both short-term attended and longer-term unattended monitoring was conducted in the vicinity of the proposed facility site and the nearest NSRs. The measurement methodology followed was in accordance with the recommendations of the following:

- International Standards Organisation Document: ISO 1996 Acoustics – Description, Measurement and Assessment of Environmental Noise, Part 1, Basic Quantities and Assessment Procedures (2016) and Part 2 Determination of Environmental Noise Levels (2017), and,
- The EPA Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities, (NG4), revised January 2016.

Ambient noise monitoring was undertaken at the Noise Monitoring Points (NMP) as illustrated in Figure 10.1. The nearest NSRs are also indicated.

Figure 10.1 Noise Monitoring Points (NMP 1- 6) & Nearest NSRs (1-14)

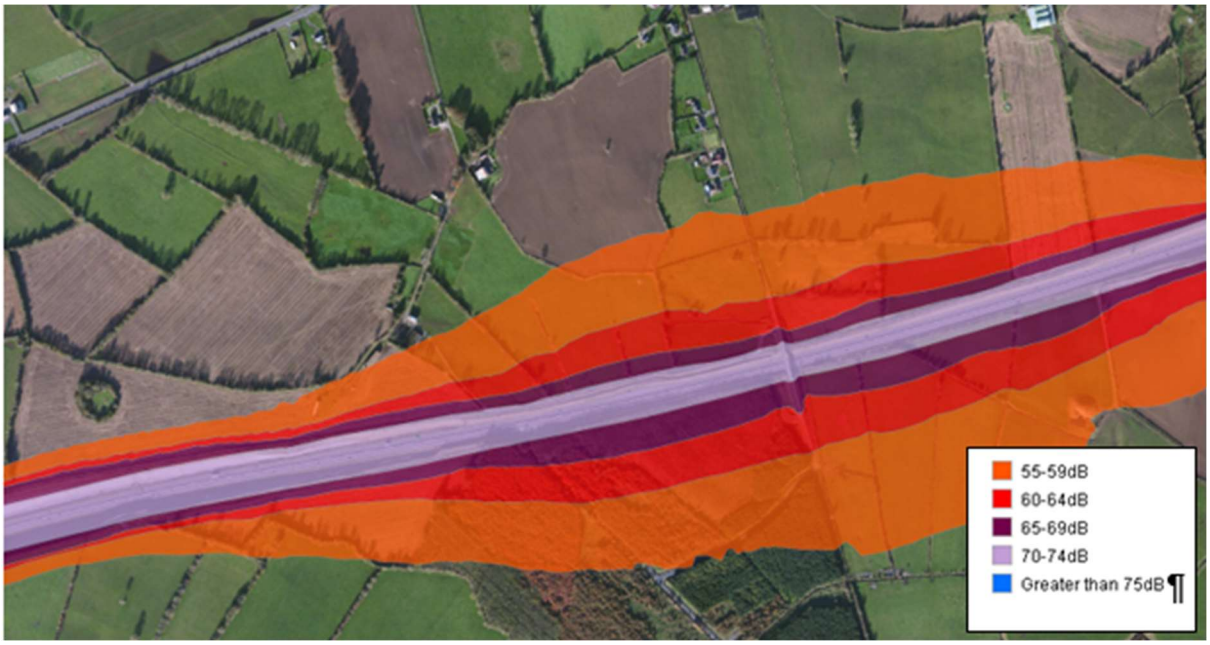


Source: Google Maps
Notes:
Nearest NSRs circled in red.
NMPs indicated as red-dots.
Blue -line planning application boundary, not licensable activity boundary.

Traffic noise mapping in accordance with the requirements of the Environmental Noise Directive 2002/49/EC and available on the EPA Mapping Website https://gis.epa.ie/EPAMaps/ was reviewed as part of the characterisation of the baseline soundscape.

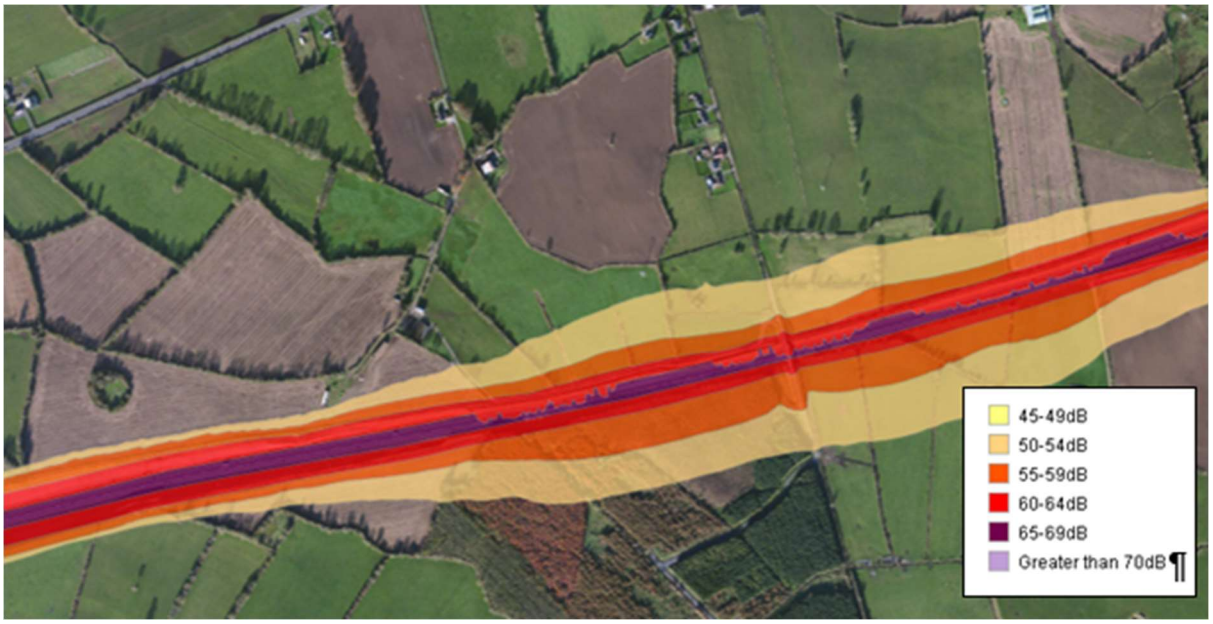
The proposed facility site lies off the R446 between the two villages of Rochfortbridge to the east and Tyrellspass to the west. The site and surrounding lands are in agricultural use with detached residential dwellings located off local roads. The main noise source in the area is the M6 motorway close to the southern site boundary. Transportation noise mapping is available on the EPA's website https://gis.epa.ie/EPAMaps/. Figures 18.2 and 18.3 3 below re-produce the road noise mapping in the vicinity of the site for the M6.

Figure 10.2 Latest Round 3 Road Noise Mapping L_{den}



Source: https://gis.epa.ie/EPAMaps/

Figure 10.3 Latest Round 3 Road Noise Mapping L_{night}



Source: https://gis.epa.ie/EPAMaps/

The R446 and other roads in the area are not heavily trafficked with intermittently frequent passing vehicles. Overall, the site and surrounding lands comprise a typical rural soundscape.

The nearest NSRs are existing detached dwellings some 60m east of monitoring point NMP6 (Refer to Figure 1) and approx. 385m from the proposed facility boundary. Additional receptors lie off the proposed long-term access to the proposed facility. The site and the surrounding area rise gently up and away from the M6 motorway. Part of the M6 motorway is in cut close to the proposed facility site which provides some attenuation of existing road traffic transportation noise to NSRs to the north.

Overall results of monitoring indicate relatively low background noise levels except in proximity to the motorway and the R446. During the attended measurements, it was noted that LAeq values (representing residual noise) are influenced by intermittent sources such as individual vehicles in the area and agricultural activities. LA90 values may at times be elevated where semi-continuous sources are in operation such as agricultural machinery etc. but these are not long-term continuous sources.

11 AIR

The site is located in agricultural fields immediately south west of Rochfortbridge. The M6 Motorway runs east-west along the southern boundary of the site. The dominant influences on air quality in the area are emissions from domestic heating and traffic. Emissions from traffic sources are expected to be the principal contributors to ambient air quality in the vicinity of the site.

The main substances which are of interest in terms of existing air quality are sulfur dioxide, nitrogen oxides (nitric oxide, NO and nitrogen dioxide NO2, collectively referred to as NOx), fine particulate matter including PM10 and PM2.5 which could originate from combustion sources and traffic. Carbon monoxide is also potentially of interest, and benzene may also be of interest from traffic sources. There are no significant new substances expected to be present in emissions released from the proposed development relative to the existing situation.

A description of existing levels of the various substances in ambient air is required to allow completion of the evaluation of air quality impacts associated with the development. The available data from the National Ambient Air Quality Network is a reliable data set for consideration in this study.

The Environmental Protection Agency (EPA) and local authorities maintain and operate a number of ambient air quality monitoring stations throughout Ireland in order to implement EU Directives and to assess the country's compliance with national air quality standards. Ireland's small population and generally good air quality means that a relatively small number of monitoring stations are sufficient across the country for the purposes of implementing the EU Air Directives. For ambient air quality management and monitoring in Ireland, four zones, A, B, C and D are defined in the Air Quality Standards (AQS) Regulations (S.I. No. 180 of 2011) and are defined as follows:

- Zone A: Dublin Conurbation.
- Zone B: Cork Conurbation.
- Zone C: 24 cities and large towns. Includes Galway, Limerick, Waterford, Clonmel, Kilkenny, Sligo, Drogheda, Wexford, Athlone, Ennis, Bray, Naas, Carlow, Tralee, Dundalk, Navan, Newbridge, Mullingar, Letterkenny, Celbridge and Balbriggan, Portlaoise, Greystones and Leixlip.
- Zone D: Rural Ireland, i.e. the remainder of the State excluding Zones A, B &C.

The subject site is considered to be located in Zone D and is considered a rural location site for assessment purposes. Air Quality Data from representative air monitoring stations in Zone D are therefore considered representative of air quality at the subject site. The EPA publishes Ambient Air Quality Reports every year which details the air quality in each of the four zones. The most recent report, published by the EPA in 2020, is the Air Quality in Ireland 2019, which contains monitoring data collected during 2019.

The EPA maintains monitoring stations in a number of rural locations including Castlebar, Claremorris, Emo, Enniscorthy, Kilkitt and Longford to monitor rural background air quality. Other monitoring stations have operated at various times and some new stations have been added to the network, but long-term data is available for the above stations. Data from the Air Quality Monitoring Annual reports for 2017 - 2019 was reviewed and a summary of the data for representative stations for the three most recent years is presented for each parameter of interest in Table 5.

The approach taken is to take the average of the three most recent years for each of the Zone D rural stations detailed above and the averages of the values for the stations are reported in Table 5. This is the data set which is used in the assessment of the potential impact of the proposed development on air quality.

It is noted from the data that existing ambient air quality is good for all health-related pollutants. All concentration levels are well within the EU Standards for all parameters of interest.

Table 11.1 Summary baseline air quality data (2017 - 2019)

Data set	Parameter and averaging interval		Concentration µg/m³
Rural background	Nitrogen dioxide NO_2	*Annual Mean, µg/m³*	4.9
Rural background	Nitrogen oxides, NO_x	*Annual Mean, µg/m³*	6.7
Rural background	Particulate Matter PM_{10}	*Annual Mean, µg/m³*	11.7
Rural background	Particulate Matter $PM_{2.5}$	*Annual Mean, µg/m³*	8.9
Rural background	Sulfur dioxide, SO_2	*Annual Mean, µg/m³*	1.8
Rural background	Carbon Monoxide CO	*Annual Mean 8-hour, mg/m³*	Note 2
Rural background	Benzene	*Annual Mean, µg/m³*	0.21

NOTE

1. Data summarised from the EPA Annual Ambient Air Quality Monitoring Reports 2017 to 2019.
2. No Zone D measurements recorded during this interval but a value of 0.1 mg/m³ *was recorded for Zone C.*

A survey of air quality in the area of the site was carried out during July - September 2021. The survey consisted of deployment of a series of diffusion tubes to measure ambient nitrogen oxides at 5 locations in the vicinity of the site. A continuous monitoring survey of nitrogen oxides (NO, NO2 and NOx) was also undertaken at one of these locations. A summary of the- results is presented in Table 6 and Table 7. The results are consistent with expectations in that the levels are generally low and are clearly influenced by emissions from traffic on the motorway. The results are seen to decrease with increasing distance from the motorway. All of the monitoring results are compliant with the annual mean air quality standard for nitrogen oxides and the results are consistent with the longer-term EPA monitoring data for rural locations. The EPA monitoring data is generally lower for the annual mean than the values recorded in this survey which is not surprising given the limited duration of this survey. The longer-term EPA data is likely to be more representative of the annual average concentrations and is therefore selected for use in this assessment. The data from the continuous monitoring survey is a useful benchmark, it confirms the dominant influence of traffic emissions on air quality at the site and also

provides valuable information on the variation in concentration at distances removed from the motorway.

Table 11.2 Diffusion tube NOx survey

Location	02 – 16 July 2021	16 – 30 July 2021	30 July – 13 Aug 2021	Average µg/m^3
OD1	5.12	7.65	6.01	6.26
OD2	4.50	6.31	6.17	5.66
OD3	3.11	6.11	3.48	4.23
OD4	3.97	6.10	3.11	4.39
OD5	3.93	7.10	3.15	4.73

Table 11.3 Continuous monitoring survey for NOx

Location	07 July 2021 to 13 Sep 2021		
	NO_2, µg/m^3	NO, µg/m^3	NOx, µg/m^3
OD3 Survey average	12.9	0.2	12.4