Appendix E - Traffic Impact Assessment

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2024

Proposed Distribution Substation, Fosterstown, Co. Meath
Traffic and Transport Assessment

ENGINEERING A SUSTAINABLE FUTURE

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Traffic and Transport Assessment

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Executive Summary

ORS has been commissioned by ESB Engineering to undertake a Traffic and Transport Assessment (TTA) of a new Distribution Substation near Fosterstown, Co. Meath to the southwest of Trim. It will consist of a control room, MV Switchgear room, HV Cable room and other ancillary facilities. Overall distribution centre will provide 1288 m^2 of area, along with upgrading of site access and all associated site works and services.

The report will examine existing and proposed traffic conditions and transport activity to determine the effects on the surrounding road network by the proposed development.

Following consultation via email in April 2024 with the Area Engineer of the Roads and Transportation Directorate of the Meath County Council, it was agreed that this traffic assessment would focus on 3No. junctions in the vicinity of the site location to assess existing and future traffic flow related to the proposed development. The junctions would cover the traffic in 4-arm R160/R156 junction to the southwest of the site, 3-arm Site Access/R160 junction at the frontage of the site and 4-arm R160/R1568/Summerhill Road Roundabout. These junctions cover all the traffic in and out of the major town Trim to the northeast of the application site and to/from the existing quarry which will be utilised sometimes by the construction HGVs from the site during construction phase. 4-arm R160/R156 junction to the southwest of the site also serves as an access for the traffic accessing the site via major towns like Mullingar. The traffic counts were undertaken on Wednesday, the 8th of May 2024 by a third-party company called IDASO.

The junctions analysed in this traffic assessment were assessed against the TII threshold and it was found that the development is anticipated to generate greater than 5% increase in traffic at the junction between the R160 and the development access road during the morning peak period; however, congestion is not expected to occur at this junction. To demonstrate that the proposed development will not negatively affect the public roads, a junction modelling was conducted to evaluate the traffic impact generated by the proposed development across all future design years.

The junctions were examined using *Junctions 9* (PICADY and ARCADY) software for the AM and the PM peak conditions under conservative future projections and Central background Traffic Growth for the considered year of construction 2025, year of opening 2026, 5-years and 15-years after development conclusion.

From a transportation planning perspective, the proposed substation is not anticipated to adversely impact the operation of the three junctions under analysis. The existing junction JCT2 currently has capacity limitations. It is evident from the analysis that the introduction of additional traffic will result in minimal effects on the road network.

1 Introduction

The purpose of this Traffic and Transport Assessment is to address the traffic and transport related issues that may arise in relation to the proposed New Distribution Substation development near Fosterstown, Co. Meath to the southwest of Trim. This report will form a part of a planning application to An Bord Pleanála.

This report, therefore, will follow the principles set out in the TII Publication PE-PDV-02045 'Traffic and Transport Assessment Guidelines', Meath County Development Plan 2021-2027 and will assess the impact the proposed development, and the associated traffic flows, will have on the public road network in the vicinity of the proposed development.

1.1 Objectives of this TTA

The objectives of this report are to assess the impact the Distribution Substation will have on the surrounding road network, with the assessment focusing primarily on the junctions between 4-arm R160/R1568/Summerhill Road Roundabout, Site Access/R160 junction at the frontage of the site and 4-arm R160/R156 junction to the southwest of the site in the vicinity of the proposed development.

Following consultation with the Roads and Transportation Department of the Meath County Council, the following 3No. junctions, shown in **Figure 1.1** below, were selected for inclusion in this assessment:

- Junction 1: 3-arm Site Access/R160 junction at the frontage of the site.
- Junction 2: 4-arm R160/R156 junction to the southwest of the site.
- Junction 3: 4-arm R160/R1568/Summerhill Road Roundabout to the northeast of the site.

Figure 1.1: Map indicating site location and JTC Locations (Source: Bing Maps)

In summary, the objectives of this report are to assess:

- The prevailing traffic conditions on the public road network in the vicinity of the proposed development;
- The potential effect on the surrounding road network due to the anticipated traffic generated by the proposed development;
- Review of the committed developments adjacent to the proposed development;
- The pedestrian, cyclist, and public transport connectivity in the vicinity of the site.

1.2 Methodology

The TII Publication PE-PDV-02045 sets out the methodology to be followed in any given TTA. The methodology that will be used in this assessment follows the guidelines set in this document and can be outlined as follows:

- 12-hour classified automatic junction turning counts (JTC) were undertaken by IDASO at the 3No. junctions on the 8th of May 2024.

- Traffic distribution splits on the public road network could be determined from the traffic counts and applied to the anticipated future generated traffic as a result of the proposed development.
- The traffic distribution splits on the public road network could be determined from the traffic counts, however, in order to provide a robust analysis, it was considered that all traffic to and from the site will make use of the 3No. junctions.
- The predicted traffic to be generated during the substation's operational stage is estimated to be negligible.
- The effect caused by the proposed distribution substation development in the neighbouring junctions could be calculated using the existing traffic flows obtained from the traffic counts and the proposed traffic generated by the development.
- The junctions were modelled using the Transport Research Laboratory (TRL) software *Junctions9* (ARCADY and PICADY) for future design years using Central Sensitivity Growth Factors for Co. Meath to obtain the existing and proposed traffic profiles at the junctions analysed for the year of construction, year of opening, 5 and 15 years after the implementation of the Distribution Substation.

2 The Proposed Development

2.1 Development Site Location

The proposed development is located to the southwest of Forsterstown in Carberrystown, Co. Meath. The vehicular/pedestrian access to the site is off regional road R160 which connects the site to the major closest town Trim to the northeast of the site and towns like Longwood to the southwest of the site which also provides access to many land uses along its way. As seen in **Figure 2.1** below, the site is bounded by R160 to the southeast and farmlands on all other three boundaries of the site.

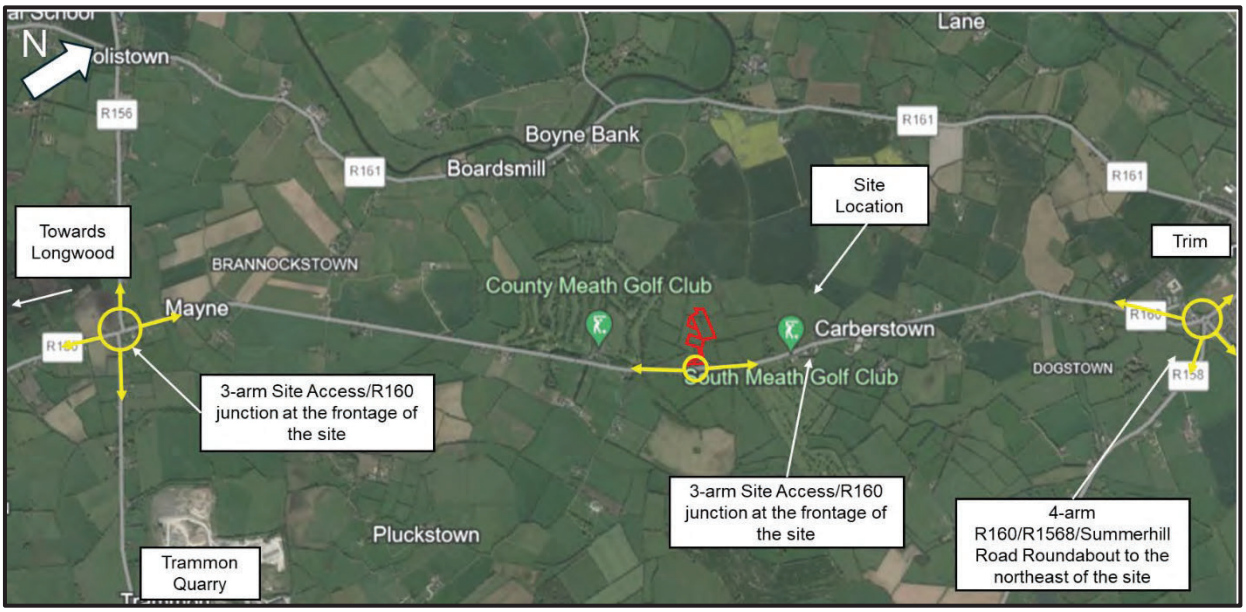

Figure 2.1: Site location map and surroundings (Source: Google Maps)

2.2 Existing Premises and Land use

The proposed development is located within a zoned land classified as 'RA - Rural Area' by the Meath County Development Plan 2021-2027. The land is also bounded by land classified as 'RA - Rural Area'. The nearest town, Trim is located ca. 3.6km to the northeast of the application site which has variety of land uses. The urban fabric of Trim is heavily influenced by the dominance of the motorised vehicle and the infrastructure that perpetuates this dominance, at the expense of other more sustainable modes of transport. Due to the rural nature of the site, pedestrian traffic to/from the site is expected to be minimal while the heavy vehicle traffic will be more frequent.

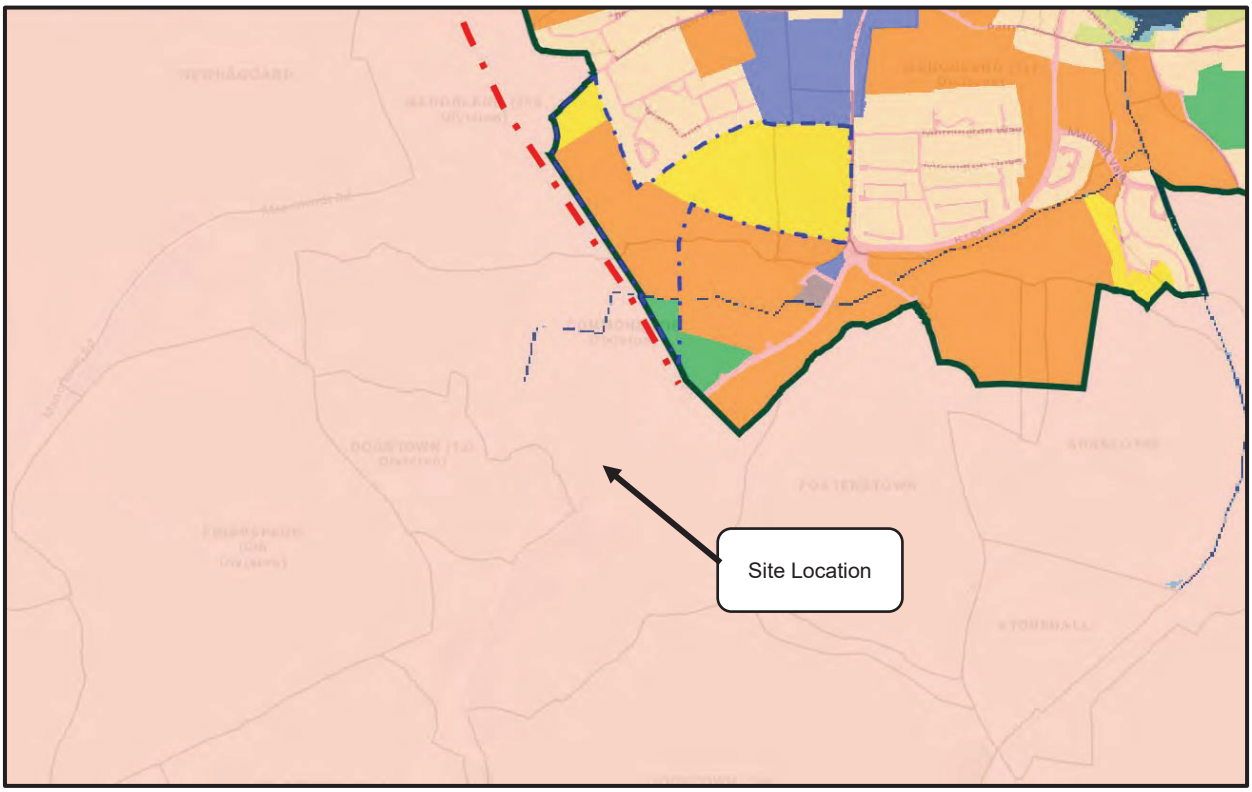

Figure 2.2: Land Use Zoning Objectives Map (Source: MCC Land Use Zoning Objectives)

2.3 Description of the Proposed Development

The project involves the construction of a Distribution Substation. This development includes a Control room, MV Switchgear room, HV Cable room, alongside other ancillary facilities. The distribution centre will encompass a total area of 1288 m^2, coupled with upgrades to site access and all associated site works and services.

Notably, there will be no formal car parking spaces as the substation will be unmanned (during routine inspections/maintenance there will only be one/two vans within the compound). During the construction, temporary parking will be provided onsite for the construction transport.

No cycle parking facilities have been incorporated on-site due to the absence of anticipated bicycle traffic.

Strategically positioned to the southwest of Forsterstown within the rural lands of Carberrystown, Co. Meath, the proposed development is bounded by R160 to the southeast and farmlands on the remaining site boundaries, all zoned as rural area. The sole proposed vehicular access/egress to the site is situated off R160 to the southeast of the application site.

The proposed layout is illustrated in **Figure 2.3** overleaf.

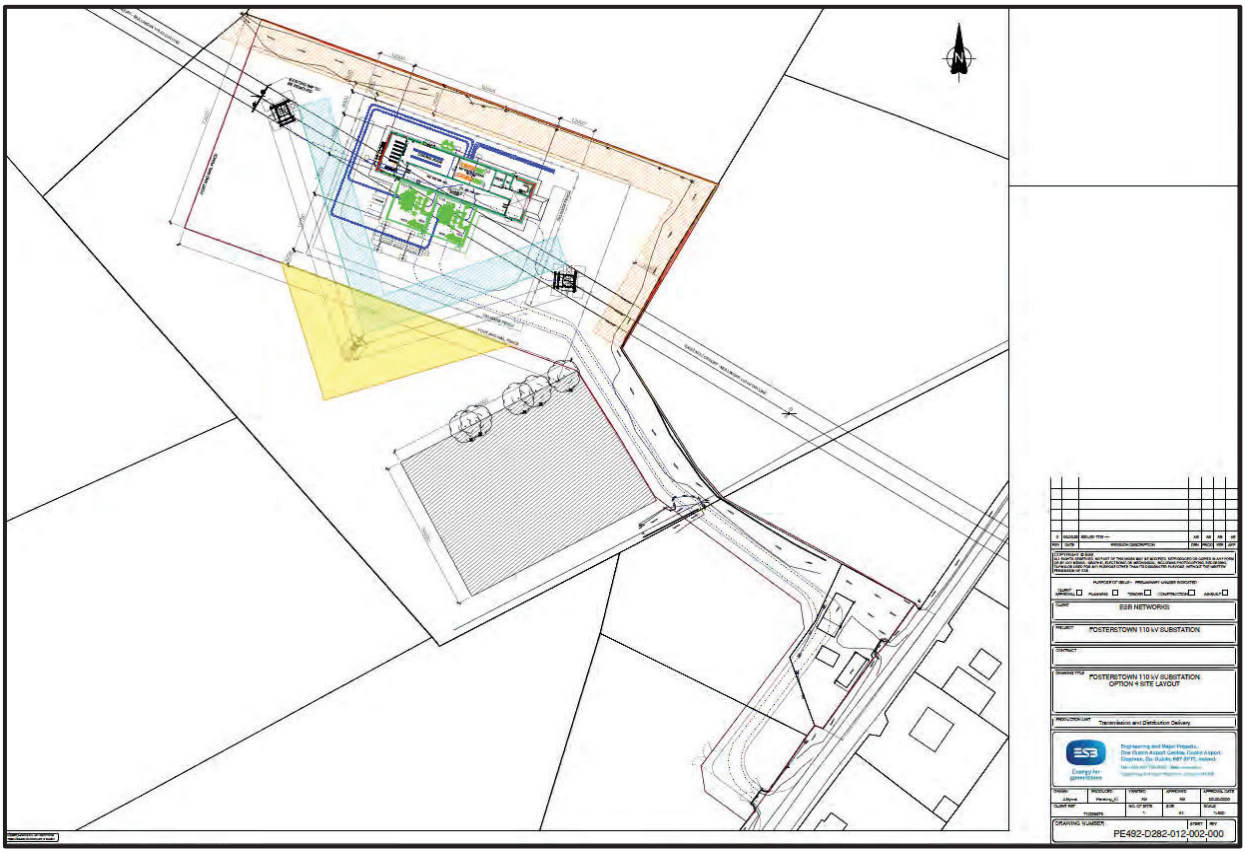

Figure 2.3: Proposed site layout Overview (Source: ESB)

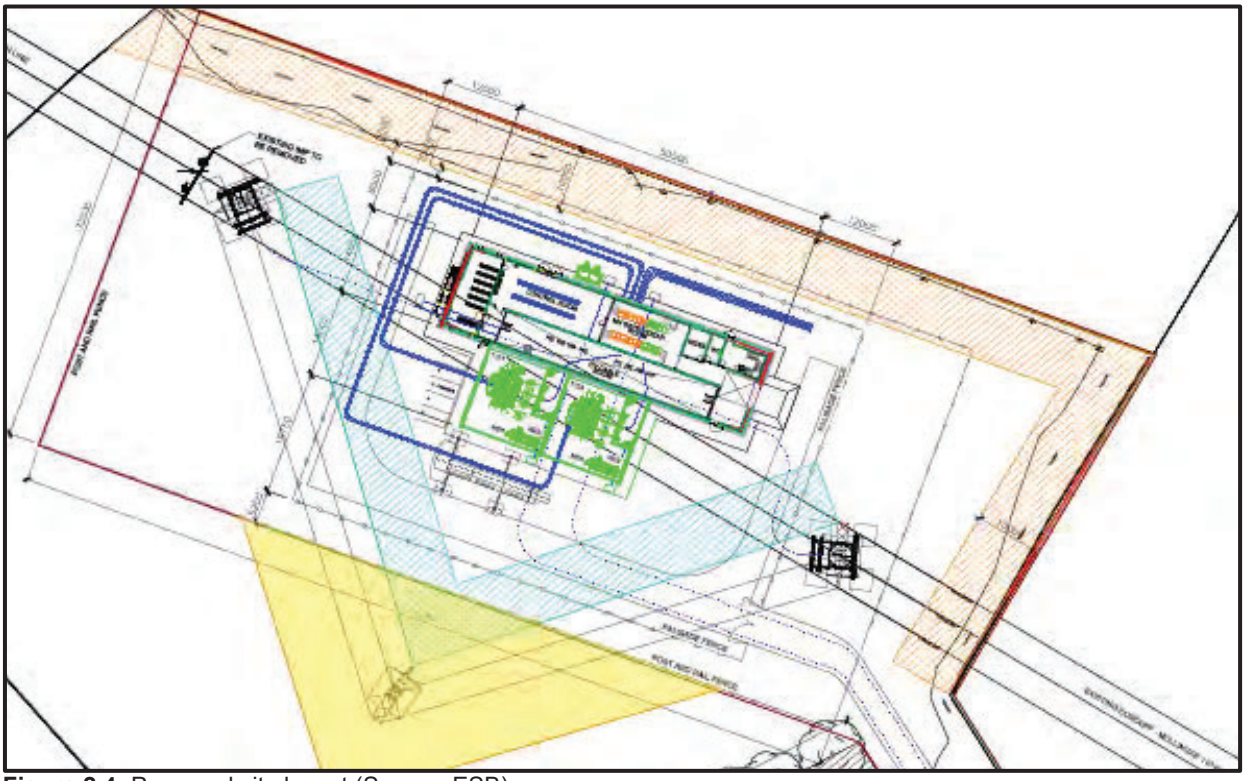

Figure 2.4: Proposed site layout (Source: ESB)

2.4 Accessibility, Parking and Pedestrian/Cyclist Connectivity

The proposed development is situated along the R160, approximately 2.6km from Trim, offering convenient connectivity to various locations and amenities within the town. The R160 provides access to the M3 motorway, located approximately 13km to the northeast, which in turn offers a direct link to Dublin City, southeast of the application site. Both vehicular and pedestrian access to the site is facilitated through a proposed priority T-junction off R160 to the southeast. However, it's worth noting that no footpaths or cycling tracks are present in the vicinity of the site, limiting accessibility by foot or bicycle. Additionally, no pedestrian or cycling facilities are provided within the site itself. No parking spaces are designated on-site as the substation will be unmanned.

Given the anticipated heavy vehicle traffic, sufficient space is allocated on-site for HGV vehicle reversing manoeuvres. The regional road R160 is a dual-lane single carriageway approximately 6.5m wide, lacking footpaths or cycle lanes. Pedestrians and cyclists must share the road with motorized users to access the development. The nearest footpath is approximately 1.2km northeast of the site on R160. However, due to the nature of the development, it is primarily expected to be accessed by private vehicles and lorries. Service vehicles will utilize an 8-meter-wide gate off R160 to the southeast for access/egress. The nearby 4-arm R160/R1568/Summerhill Road Roundabout to the northeast provides well-established pedestrian facilities connecting to Trim.

Meath County Development Plan 2021-2027 stated in item **MOV POL 17** the objective *'To identify and seek to implement a strategic, coherent and high-quality cycle and walking network across the County that is integrated with public transport and interconnected with cultural, recreational, retail, educational and employment destinations and attractions.'*

Meath County Development Plan 2021-2027 stated in item **MOV OBJ 28** the objective **'***To revise road junction layouts, where appropriate, to provide dedicated pedestrian and cycling crossings, reduce pedestrian crossing distances, provide more direct pedestrian routes, and reduce the speed of turning traffic.'*

The closest town, Trim, while lacking direct connectivity to a rail line, benefits from its proximity to the national road network. The current Development Plan outlines several distributor roads within the town, the implementation of which is expected to enhance the site's connectivity to the wider road network. Furthermore, public realm improvements within Trim as specified in Meath County Development Plan 2021-2027 are anticipated to bolster pedestrian infrastructure significantly. Although there are no specific proposals for pedestrian infrastructure in the immediate vicinity of the site, the anticipated increase in pedestrian activity within Trim town can serve to encourage multi-modal trips. Additionally, there may be future proposals for pedestrian infrastructure near the site to accommodate this shift towards pedestrian-friendly environments.

2.4.5 Vehicle Parking

As previously mentioned, the development will consist of 1 new distribution station with a total area of 1288 m^2. The Meath County Development Plan 2021-2027 was consulted in order to obtain the car parking standards for the proposed development. Table 11.2 summarises the standards required for developments such as the 'Distribution Station'. However, it's worth noting that the table does not specify the type of land use for distribution substations. Therefore, the Council will stipulate its requirements regarding car parking for such developments as stated in Meath County Development Plan 2021-2027.

The proposed layout, depicted in **Figure 2.4**, designates temporary parking spaces for the site. During the construction phase of the proposed development, it is anticipated that there will be construction traffic, involving approximately 24 work vehicles per day. In the case of HGV vehicles, 10 HGV vehicle movements in per day and 10 out per day are expected.
To accommodate this temporary increase in traffic, sufficient temporary parking spaces will be provided within the site throughout the construction phase, which is expected to last for a minimum of 12 months. Given the anticipation of heavy vehicle traffic, sufficient space is also allocated on-site for HGV vehicle reversing manoeuvres.

During routine inspections or maintenance after the construction completion, there will typically be only one or two vans within the compound. Considering the negligible traffic generation estimated at approximately 1 LGV/HGV visit per week, there is no need in providing designated car parking spaces for the development.

It is stated in the Meath County Development Plan 2021-2027 that *'Accessible car parking spaces shall be provided at a minimum rate of 5% of the total number of spaces, for developments requiring more than 10 car parking spaces, with the minimum provision being one space (unless the nature of the development requires otherwise).'* The proposed development is not expected to generate any vehicle requiring accessible parking. Therefore, no accessible parking space is provided at present. However, should the need arise in the future, provisions should be made to accommodate an accessible car parking space.

2.4.6 Cycle Storage

The Meath County Development Plan 2021-2027 outlines a policy objective aimed at ensuring the provision of cycle parking facilities as per the standards specified in Table 11.4 Cycle Parking Standards. However, the proposed development, namely the distribution substation, does not currently include provisions for cycle parking spaces due to the expectation of minimal to no cyclist traffic.

3 Existing Traffic Conditions

3.1 Existing Road network

The junctions and roads included in this assessment are existing roads already in active usage and are part of a wider area; as such, their condition and suitability for purpose are not subject to assessment as part of this report.

All vehicular traffic associated with the site will utilize the regional road R160, which runs along the southeast boundary of the application site. R160 is a single-carriageway regional road featuring one lane in each direction, with a width of approximately 6.2m. This road connects the 4-arm R160/Castle Street/R154 roundabout to the northeast of the site in Trim, extending to the R160/R148 junction to the south in Broadford. It intersects three junctions in the vicinity of the site, namely the 4-arm R160/R156 junction to the southwest, the 3-arm Site Access/R160 junction at the frontage of the site, and the 4-arm R160/R1568/Summerhill Road Roundabout.

It's notable that pedestrian and cycling facilities are lacking along this road section near the application site, as mentioned in **section 2.4** of this report. Pedestrians and cyclists must share the road with motorized users to access the development. The nearest footpath is approximately 1.2km northeast of the site along R160. Additionally, the presence of streetlights is inconsistent throughout the road's length. The speed limit on this road is 80km/h.

The 4-arm R160/R156 priority-controlled junction located southwest of the site is approximately 3.4km away and grants access to Keegan Quarries in Trammon which will be used during construction activities. This route will serve as a temporary route for construction traffic to and from the site. Equipped with road markings and stop signs, this junction lacks pedestrian and cycling facilities. However, the width of each carriageway arm is ample to accommodate construction and HGV vehicle turning. Despite the absence of streetlights, it's worth noting that construction activities are scheduled for daytime hours exclusively.

In contrast, the R160/R158/Summerhill Road roundabout to the northeast of the site, situated in Trim, serves as a gateway to and from Trim town. Although traffic to and from the site may occasionally utilize this roundabout during the construction phase, its usage post-operational phase remains uncertain. Pedestrian facilities are in place at R160/R158/Summerhill Road roundabout, as seen in **Figure 3.1** and **Figure 3.2.**

The 3No. junctions mentioned above and that are part of this assessment are displayed in **Figure 3.1, Figure 3.2, Figure 3.3, Figure 3.4** and **Figure 3.5** below.

Figure 3.1: R160/R158/Summerhill Road roundabout from R160 south (Source: Google Street View)

Figure 3.2: R160/R158/Summerhill Road roundabout from R158 (Source: Google Street View)

Figure 3.3: R160/Site Access Junction from R158 from R160 south (Source: Google Street View)

Figure 3.4: 4-arm R160/R156 junction from R160 south (Source: Google Street View)

Figure 3.5: 4-arm R160/R156 junction from R160 north (Source: Google Street View)

3.2 Pedestrian and Cyclist Connectivity

The proposed development is located approximately 3.6km to the southwest of Trim town in Co. Meath. At present, there are no footpaths or cycle tracks in the vicinity of the application site on R160. However, there are footpaths of varying width and condition approximately 1.2km northeast of the site along R160. However, there are no cycle tracks on R160 in the vicinity of the application site or in the wider environment in Trim town which discourages people from cycling.

As mentioned before, public realm improvement schemes are proposed in throughout Trim Town which shall further encourage pedestrian activities within Trim although not to/from the site. However, it is a policy objective MOV POL 3 *'To promote sustainable land use planning measures which facilitate transportation efficiency, economic returns on transport investment, minimisation of environmental impacts and a general shift towards the greater use of public transportation throughout the County.'*

Additionally, the proposed development of Masterplan 29 and Masterplan 30 in Trim town is expected to accommodate an increase in the local population. This growth can potentially support future road improvements in the wider network, including the R160 in the vicinity of the site. The Master Plan will incorporate proposals for the delivery of the RT 1 distributor and bridge, connecting the Dublin and Navan roads. These initiatives, along with other factors, have the potential to foster further sustainable transport growth in the broader road network, aligning with established policy objectives.

Figure 3.6: Lack of pedestrian/Cycling infrastructure in the vicinity of the site (Source: Google Street View)

3.3 Public Transport Provision

No bus services are provided in the vicinity of the application site. In addition to that, there are no train stations in the nearby towns like Trim. The nearest train station is in Enfield which is 19km away, or accessible in 18 mins by car.

The closest bus stop to the application site is approximately 3km northeast, situated within the Knightsbridge medical centre southwest of the R160/R158/Summerhill Road roundabout. This stop is serviced by route No. 189 operated by TFI Local Link Louth Meath Fingal, which operates five services per day, connecting Enfield to Navan while passing through Trim town. Additionally, Bus Éireann provides another bus route, No. 190, serving Trim-Navan-Drogheda, is available in Trim, roughly 3.8km northeast of the application site. This route runs at a frequency of every 30 minutes to an hour, providing further transportation options for commuters. The locations of these bus stops are illustrated in **Figure 3.6** overleaf.

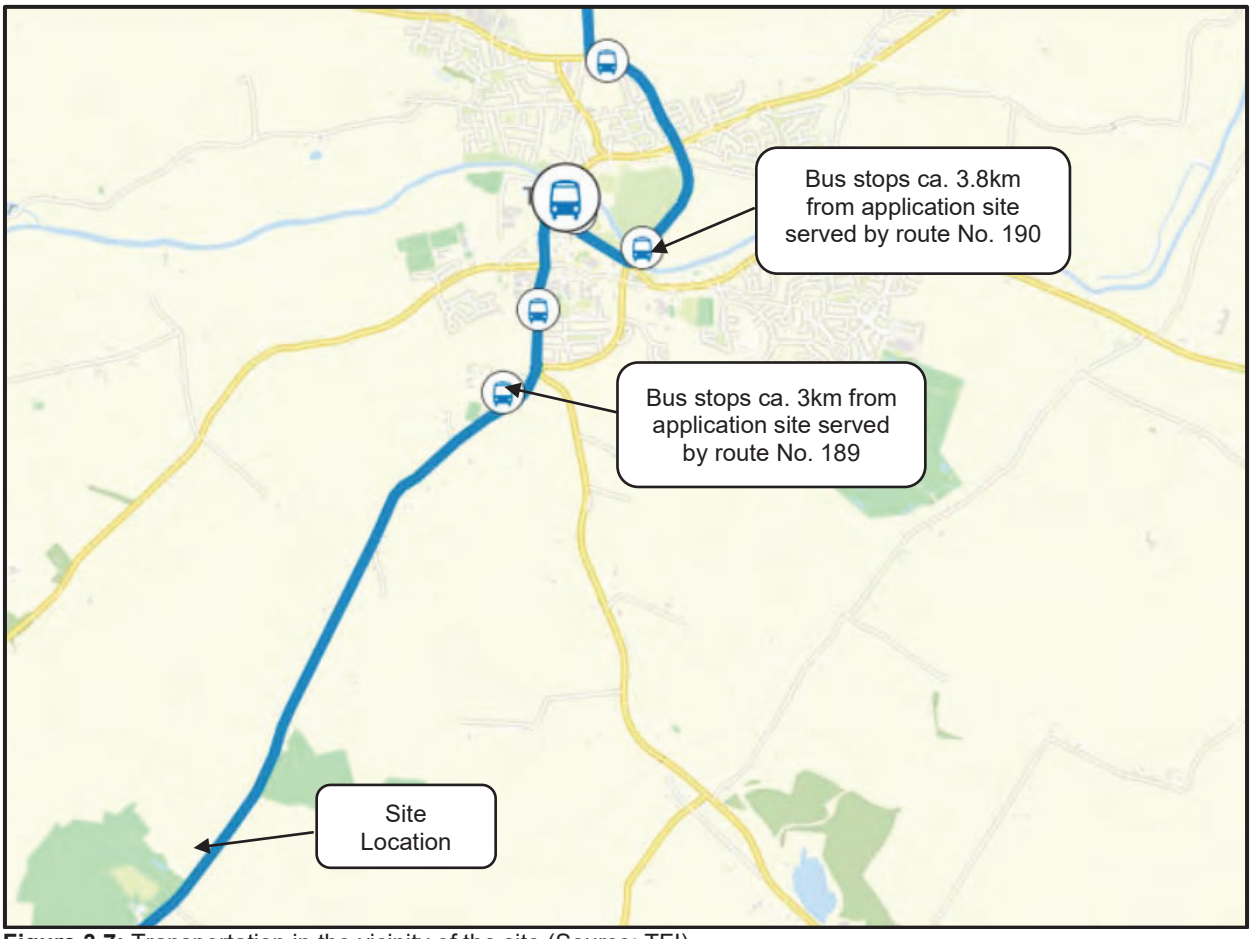

Figure 3.7: Transportation in the vicinity of the site (Source: TFI)

The initial strategic plan outlined by the National Transport Authority (NTA) for the Local Link Rural Transport Programme emphasizes two primary objectives: tackling rural social exclusion and integrating rural transport services with other public transportation networks. The mission statement of the Programme underscores its commitment to delivering a high-quality community-based public transport system across rural Ireland, tailored to meet local demands. Furthermore, this program may expect to facilitate the introduction of additional bus routes in the vicinity of the application site, thereby enhancing accessibility and connectivity.

Additionally, it is a policy objective RPO 8.13 to *'Support the Local Link Rural Transport Programme throughout rural areas of the Region.'*

3.4 Proposed Transport Infrastructure

There are a few proposals to facilitate and improve the transport within County Meath and more importantly within Trim which is a nearby town from the application site. However, no transport infrastructures are proposed in the vicinity of the site or along R160. These proposals are mentioned in the Meath County Development Plan 2021-2027 that are in different stages of design and implementation and are detailed below:

- Masterplans: Trim has three designated Master Plan areas for integrated land development. Master Plan 30 aims to repurpose the former Potterton cattle sales yard into a mixed-use residential and community development. Master Plan 29 focuses on creating

a balanced "live-work" community by combining employment opportunities with Executive-style housing and essential road infrastructure. Master Plan 31 involves developing mixed-use, residential, open space, high amenity, and town centre zoned lands, including the OPW site, to the west of the town centre, incorporating both greenfield lands and existing buildings and uses.

- Distributor road links: several local distributor road links are planned for construction, subject to Appropriate Assessment, consultation, and compliance with environmental regulations. RT 1 involves a road link from Dublin Road at Effernock to Navan Road at the Motor Park, including a new Boyne River bridge. RT 2 aims to connect the Athboy Road to the local distributor road west of the Town Centre Expansion area. RT 3 focuses on constructing a road link west of the mixed-use lands connecting to the Kinnegad Road, to be provided and funded alongside adjacent developments. RT 4 entails a road link between the Kinnegad Road and the Longwood Road, while RT 5 involves a link between the Longwood Road and the Summerhill Road, both to be coordinated with nearby industrial lands. The development of these projects' hinges on the outcome of the Appropriate Assessment process, ensuring compliance with European site integrity regulations and mitigation of adverse effects. These distributer link roads have proposed to improve active travel infrastructure in Trim.

- Public realm: It is a policy objective to enhance the public realm of Trim. Improvements are planned throughout the town, with a particular focus on Market Street and the Watergate Street junction. This initiative aims to revitalize urban spaces, promote pedestrian-friendly environments, and enhance the overall aesthetic appeal of these areas. By incorporating elements such as upgraded streetscapes, improved lighting, green spaces, and pedestrian amenities, the project seeks to create vibrant and inviting public spaces for residents and visitors alike.

The development of these masterplans, distributor road links and public realm improvements may increase traffic flow and population in Trim, potentially prompting additional pedestrian connectivity and active travel infrastructure in the broader road network, leading to proposed active travel improvements near the site.

3.5 Existing Traffic flows

Automated junction turning counts (JTC) have been undertaken at the junctions shown in **Figure 3.**, on Wednesday 8th May 2024 by a third-party company named IDASO. The traffic counts were carried out during a 12-hour period from 07:00 AM to 07:00 PM and encompass all movements at the junctions. The traffic counts cover movements of pedal cycles, cars, taxis, buses, LGVs and HGVs and the final number of traffic is presented in Passenger Car Unit (PCU). PCU is the impact that a mode of transport has on traffic compared to a single car, e.g., a private car represents 1 PCU whereas an HGV represents 2.3 PCUs.

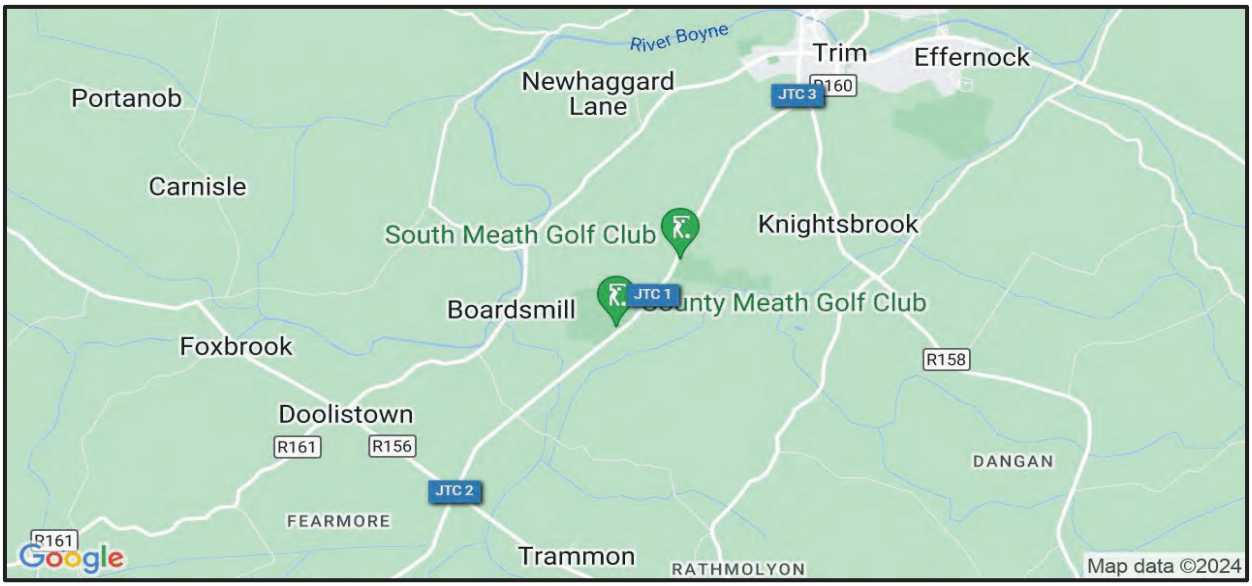

Figure 3.8: Junctions surveyed (Source: IDASO)

The AM and PM traffic peak periods were identified along the junctions and occurs between 08:00 and 09:00 in the morning in Junction 1 and Junction 3 and between 07:45 and 08:45 in Junction 2. The PM peak occurs between 16:45 and 17:45 in Junction 1 and Junction 2 and between 16:30 and 17:30 in Junction 3. **Table 3.2** summarises the traffic flows observed in the three junctions in the AM and PM periods. **Figure 3.9**, **Figure 3.10** and **Figure 3.11** display the traffic flows of all the vehicles observed in the junctions in the AM and PM periods, respectively.

Table 3.1 – Traffic Flows (PCU)		
	Peak Time	
Junction	**AM**	**PM**
1 – Site Access/R160	587	664
2 – R160/R156	883	970
3 R160/R1568/Summerhill Road	1551	1711

From the traffic counts, it could be noted that the majority of traffic accessing the R160 from the Junction 3 is from Trim town via the Ring Road (R160): a total of 17% in the morning period and 19% in the evening period. For traffic exiting the R160 onto this roundabout, 19% of traffic in the morning and 16% in the evening travels towards the Trim town via the same road.

To the southwest of the site, similar pattern has been observed. 26% of the traffic accessing the R160 in the morning period and 17% in the evening arrive from the Longwood village via R160. For traffic exiting the R160 onto this roundabout, 16% of traffic in the morning and 23% in the evening travels towards Longwood via the same road.

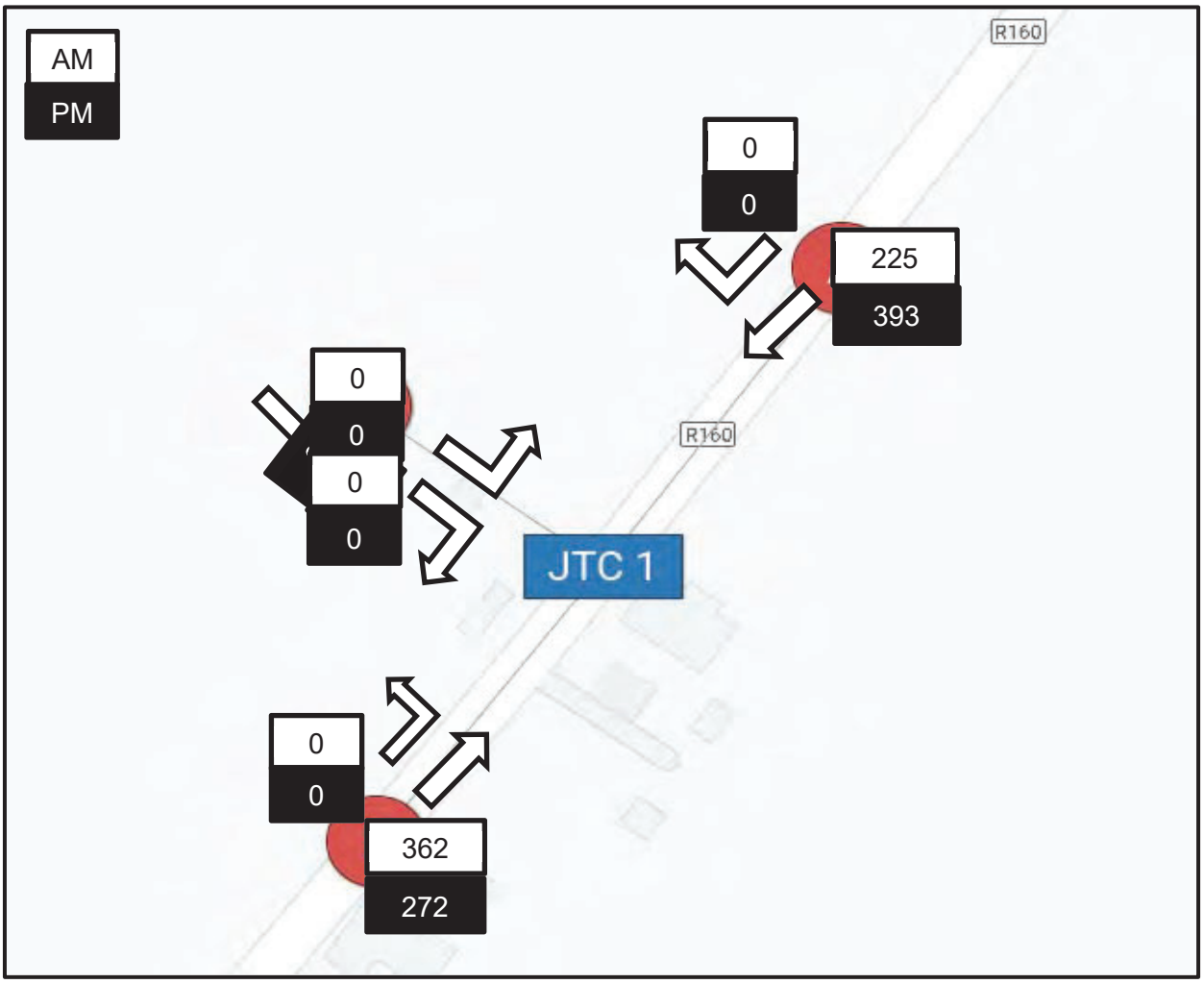

Figure 3.9: AM and PM Traffic Counts in JTC1 (Vehicles)

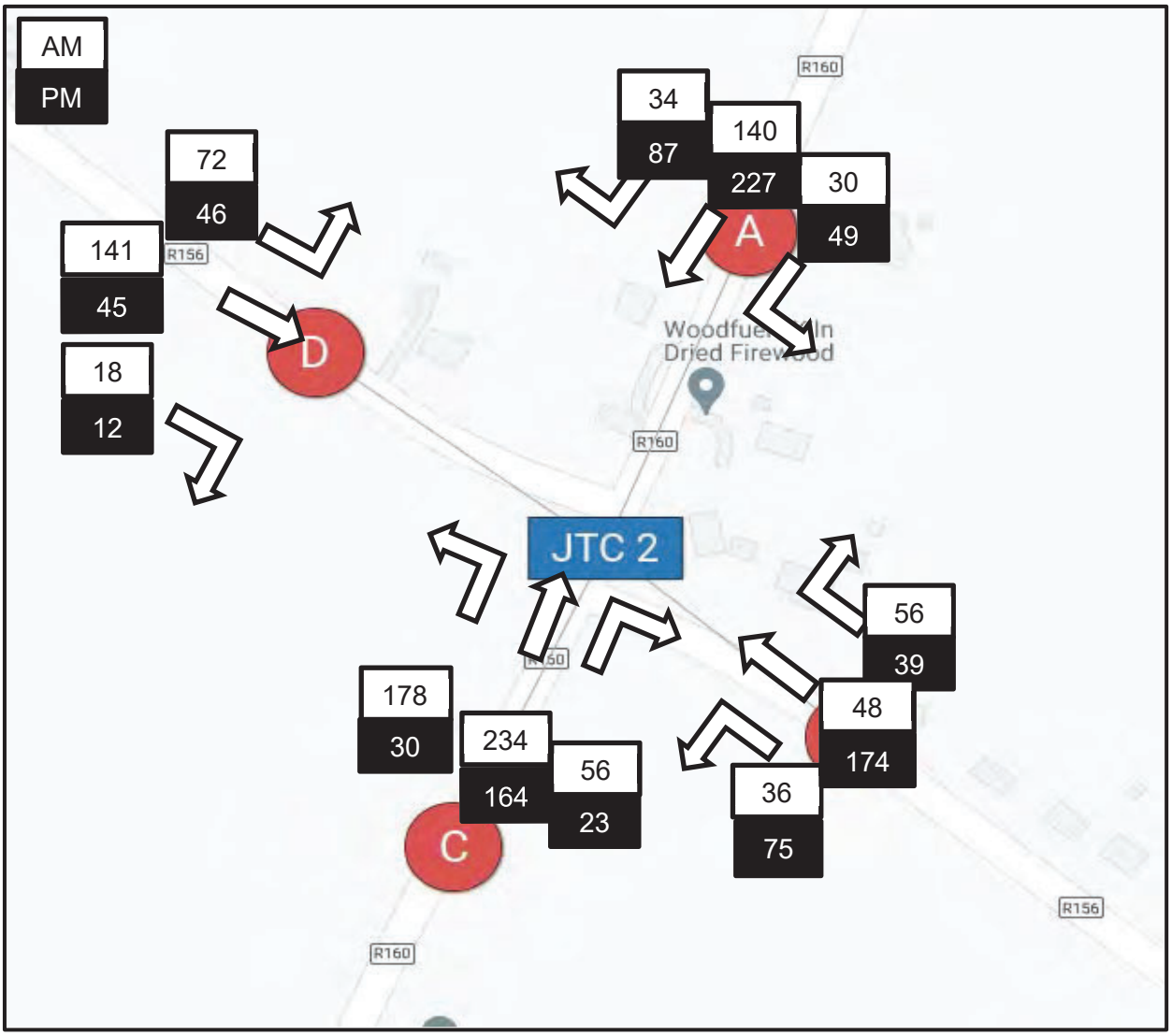

Figure 3.10: AM and PM Traffic Counts in JTC2 (Vehicles)

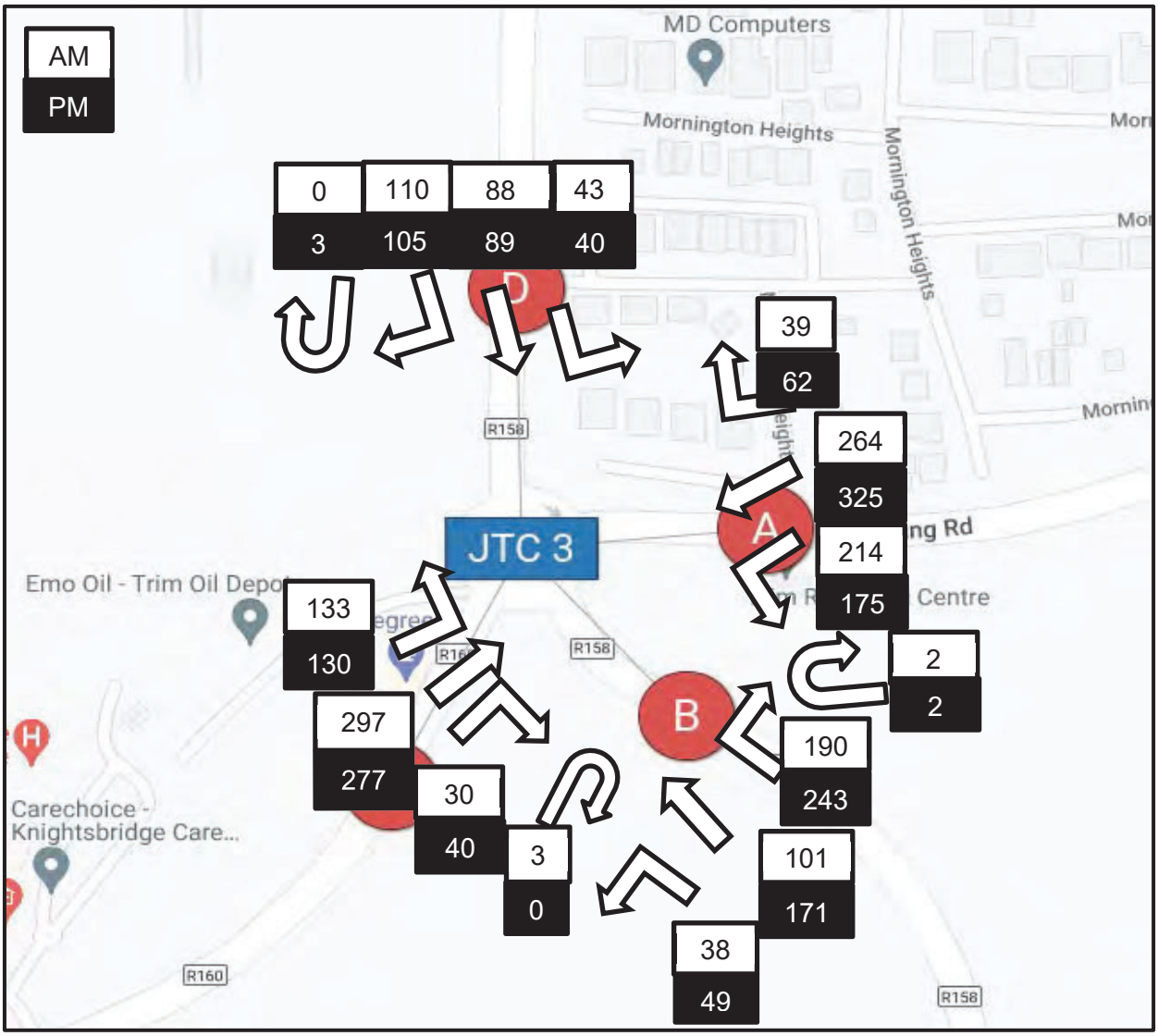

Figure 3.11: AM and PM Traffic Counts in JTC3 (Vehicles)

3.7 Traffic Collisions Data in the Vicinity of the Site

Traffic data on collisions in the vicinity of the site could not be obtained as the Road Safety Authority website is currently in process of reviewing its road traffic collision data. Therefore, this Traffic Assessment is unable to verify the safety along the road network in the vicinity of the site.

4 Trip Generation, Distribution and Impact on the Road Network

The traffic generation for the proposed development, once operational, will be negligible. As a substation, it will primarily have occasional visits from maintenance personnel and will not require daily staff presence. Conservatively, it can be assumed that there will be one trip arriving to the ESB station in the morning and one leaving in the afternoon.

The anticipated traffic flows for the development during construction, for the expected number of 30 workers at the site, will be 24No. vehicles arriving in the morning and 24No. vehicles leaving the site in the afternoon, assuming, in a conservative approach, a car occupancy of 1.25.

The most notable impact during the construction would be the movement of HGV to and from the proposed site, with a period of intensified HGV movement for the first 3 - 6 months of the project (assumed total construction duration is 12 months). The combined HGV deliveries during civil works is expected to be approximately 730 HGV vehicle movements with approx. 90% of HGV deliveries occurring in 65 working days. Therefore, it is envisaged that there will be on average 10No. HGV vehicle movements in and 10No. out per day.

Due to a lack of detailed information and to ensure a thorough analysis, it is presumed that the generated traffic will align with the peak network times for the evaluated junctions. Additionally, it was assumed that 50% of these trips would originate from or head northbound, towards the Trim town, and 50% southbound, towards Longwood.

Figure 4.1 shows the expected traffic generation profile during the construction.

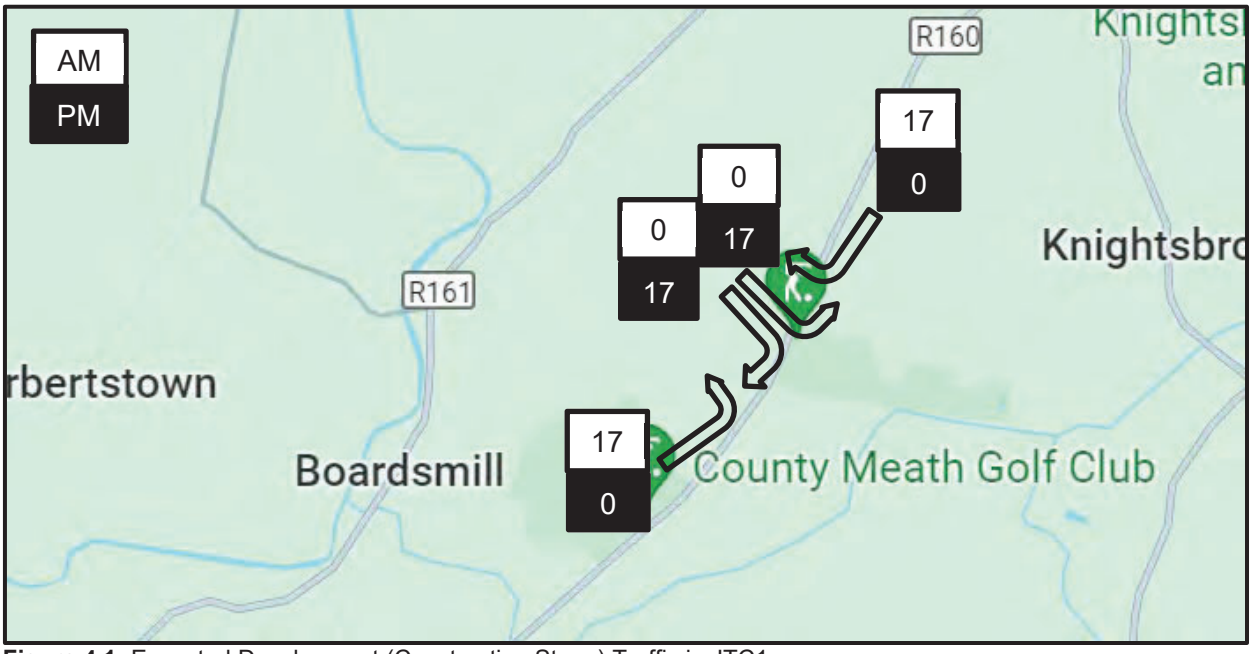

Figure 4.1: Expected Development (Construction Stage) Traffic in JTC1

4.2 Cumulative Impact

As part of this Traffic Assessment, to assess the existing and expected traffic along the road network in the vicinity of the proposed development, the Meath County Council Planning Application website was consulted to include all committed developments in the area. 1No. committed development was identified to the northeast of the site which would affect the Junction 3 analysed in the vicinity of the proposed development, as shown in **Figure 4.2** below.

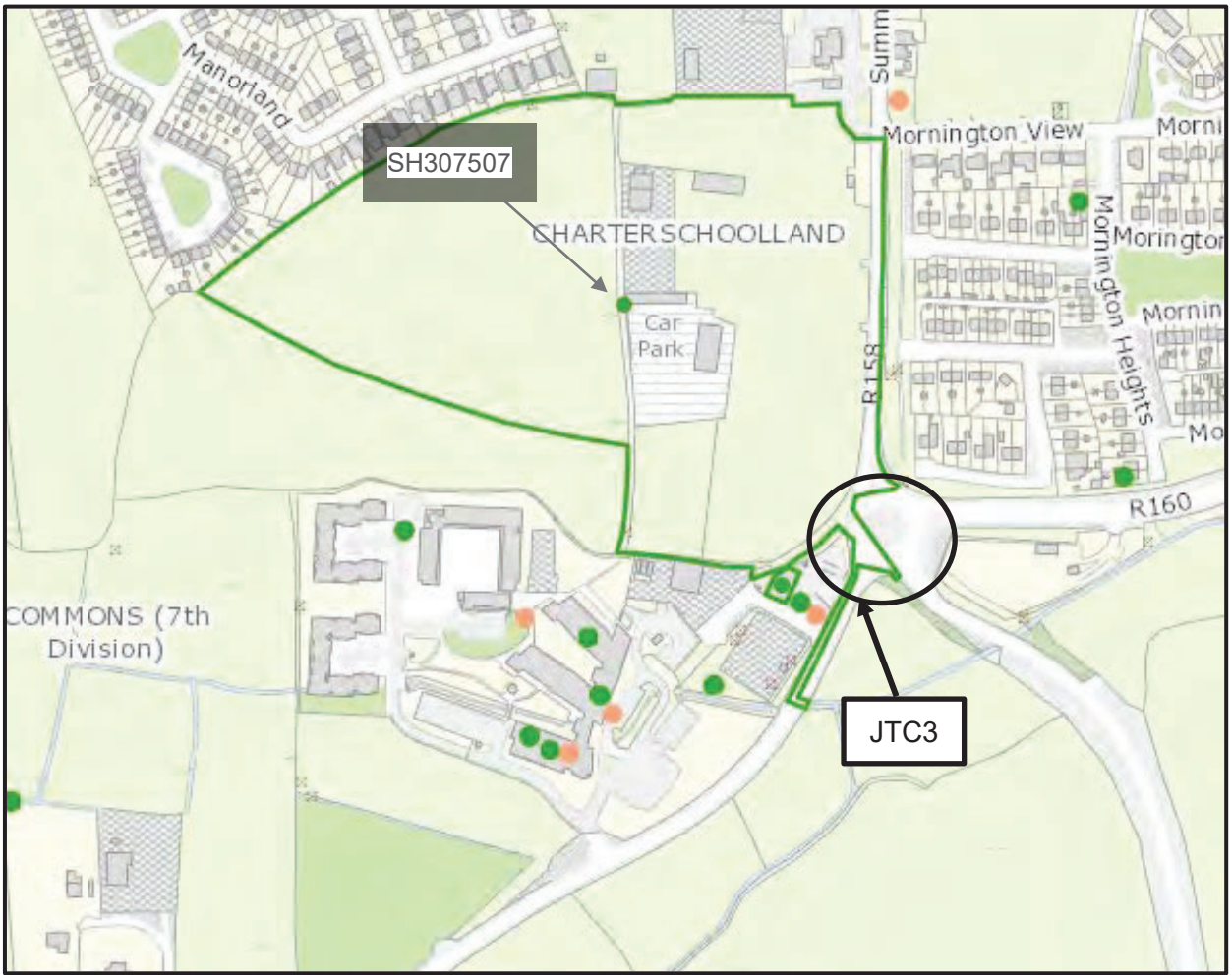

Figure 4.2: Planning applications in the vicinity of the proposed development (Source: Meath County Planning Website)

This development is presented in **Table 4.1** below.

Table 4.1 – Committed Development in the Vicinity of the Facility				
Planning Reference	**Decision Type**	**Description**	**Traffic generation**	
			AM	**PM**
SH307507	Conditional	Construction of: • 320 no. dwellings comprising: o 136No. houses o 120No. apartments within 4No. 3-5 storey blocks o 64No. duplex apartments within 8No. 3-storey blocks • A creche and community centre (total floor area c.739sqm). • 563No. car parking spaces, 188No. secure/covered bike parking areas and communal bin stores for apartments/duplexes. • Vehicular and pedestrian accesses from Summerhill Road (R158) with associated upgrades including new cycleways and footpaths. • All other site works, landscaping, boundary treatments, ESB substation/ switchrooms, plant and services provision required to facilitate the development.	205	207

The anticipated traffic flows for the proposed residential development were sourced from the TRICS database. The TRICS database contains traffic generation data for developments of a similar nature to the proposed development. TRICS was established in the UK and is a substantial source of validated empirical data which contains information on arrival and departure rates for a range of different types and sizes of development throughout Ireland.

The trip rate data for the proposed development has been summarised in **Table 4.2**, **Table 4.3** and **Table 4.4.**

Table 4.2 – TRICS output for Residential Developments						
TRICS 7.10.2						
Trip Rate Parameter: NUMBER OF DWELLINGS						
TRIP RATE for Land Use 03 – RESIDENTIAL / A - HOUSES PRIVATELY OWNED						
Calculation Factor: 1 DWELL						
Count Type: TOTAL VEHICLES						
TIME RANGE	ARRIVALS			DEPARTURE		
	No. Days	Ave. DWELL	Trip Rate	No. Days	Ave. DWELL	Trip Rate
07:00-08:00	43	333	0.071	43	333	0.283
08:00-09:00	43	333	**0.140**	43	333	**0.353**
09:00-10:00	43	333	0.122	43	333	0.151
10:00-11:00	43	333	0.11	43	333	0.127
11:00-12:00	43	333	0.117	43	333	0.124
12:00-13:00	43	333	0.133	43	333	0.133
13:00-14:00	43	333	0.137	43	333	0.13
14:00-15:00	43	333	0.148	43	333	0.162
15:00-16:00	43	333	0.229	43	333	0.154
16:00-17:00	43	333	0.255	43	333	0.147
17:00-18:00	43	333	**0.329**	43	333	**0.154**
18:00-19:00	43	333	0.258	43	333	0.144
19:00-20:00	1	231	0.091	1	231	0.091
20:00-21:00	1	231	0.108	1	231	0.065
Daily Trips Rates:	2.248			2.218		

Table 4.3 – TRICS Output for the Childcare Facility						
TRICS 7.10.4						
Trip Rate Parameter: Gross floor area						
TRIP RATE for Land Use 04 - EDUCATION/ D - NURSERY						
Calculation Factor: 100 sqm						
Count Type: TOTAL VEHICLES						
TIME RANGE	ARRIVALS			DEPARTURE		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
06:00-07:00	1	509	0	1	509	0
07:00-08:00	3	553	1.025	3	553	0.121
08:00-09:00	3	553	**3.677**	3	553	**2.773**
09:00-10:00	3	553	2.833	3	553	3.014
10:00-11:00	3	553	0.181	3	553	0.181
11:00-12:00	3	553	0.844	3	553	0.241
12:00-13:00	3	553	1.145	3	553	1.808
13:00-14:00	3	553	0.723	3	553	0.784
14:00-15:00	3	553	1.326	3	553	0.723
15:00-16:00	3	553	1.326	3	553	0.784
16:00-17:00	3	553	1.447	3	553	1.748
17:00-18:00	3	553	**2.833**	3	553	**4.219**
18:00-19:00	3	553	0	3	553	0.904
Daily Trips Rates:	17.36			17.30		

The TRICS output is presented in a trip rate per unit. The unit reference is dependent on the development in question, such as per person, per house or unit area. In this case, the multiplication factor to be applied to the unit rate is number of dwellings of the proposed residential development (320) and the gross floor area of the Childcare facility (739).

Table 4.4 – Expected Traffic from the Committed Development			
Time Range	**Arrivals**	**Departures**	**Total**
08:00-09:00	72	133	205
17:00-18:00	126	80	207

4.3 Future Year Traffic Growth

Transport Infrastructure Ireland (TII) issues a range of forecasts: low growth, central growth, and high growth. The implementation of policies relating to the National Sustainable Mobility Policy will act as a deterrent to high growth in car-based travel. Low growth factors are however likely to be equally unrealistic at present, therefore, this assessment has used central growth factors, which was extracted from the TII Publication PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, published in October 2021, outlined in **Table 4.5, Table 4.6** and **Table 4.7** below.

Table 4.5 – Development Location Information

Location of Development	Meath
Sensitivity Area	Central
Year of Traffic Counts	2024
Year of Assessment	2024
Year of Development Construction	2026

Table 4.6 – TII Annual Growth Rates (Central Growth) for Co. Meath

Year	LGV	HGV
2016 – 2030	1.0173	1.0365
2030 – 2040	1.0070	1.0186
2040 – 2050	1.0059	1.0207

Table 4.7 – Growth Factors for Future Design Years for Co. Meath

	Counts	Construction	Completion	Completion +5	Completion +15
	2024	2025	2026	2031	2041
LGV	1.000	1.017	1.035	1.116	1.195
HGV	1.000	1.037	1.074	1.263	1.522

4.4 Generated Traffic Splits Through Neighbouring Junctions

Based on the traffic counts obtained in May 2024 at the 3No. junctions mentioned above, the travel distribution could be established.

From the traffic counts obtained, the morning peak on both junctions occurs between 8:00-09:00 am and afternoon peak between 16:45-17:45 with a total of 3065 PCU associated with junction 1 during the AM peak and 2993 in the PM peak and 3418 PCU in the AM at junction 2 and 3441 PCU in the evening peak.

It has been assumed that all the peak flows to and from the proposed development will coincide with the peak traffic observed in the junctions, in order to obtain a more conservative analysis.

To obtain the worst-case scenario analysis, this traffic assessment considered that arrivals follow the same trend as the traffic counts. Therefore, all traffic leaving the site will be split at the 2No. 4-arm junctions following the same trend observed on the day of the traffic counts, as it gives the most robust analysis.

The projected 2026 traffic flows could be calculated using TII's Central Growth Factor for Co. Meath. Based on the traffic levels expected for 2026 based on the traffic counts and the predicted traffic to and from the proposed development, the impact in the junctions could be determined. **Figure 4.** below and **Figure 4.4** overleaf display the expected levels of the generated traffic on both 4-arm junctions affected in the vicinity of the site, projected for the proposed year of development conclusion in 2026.

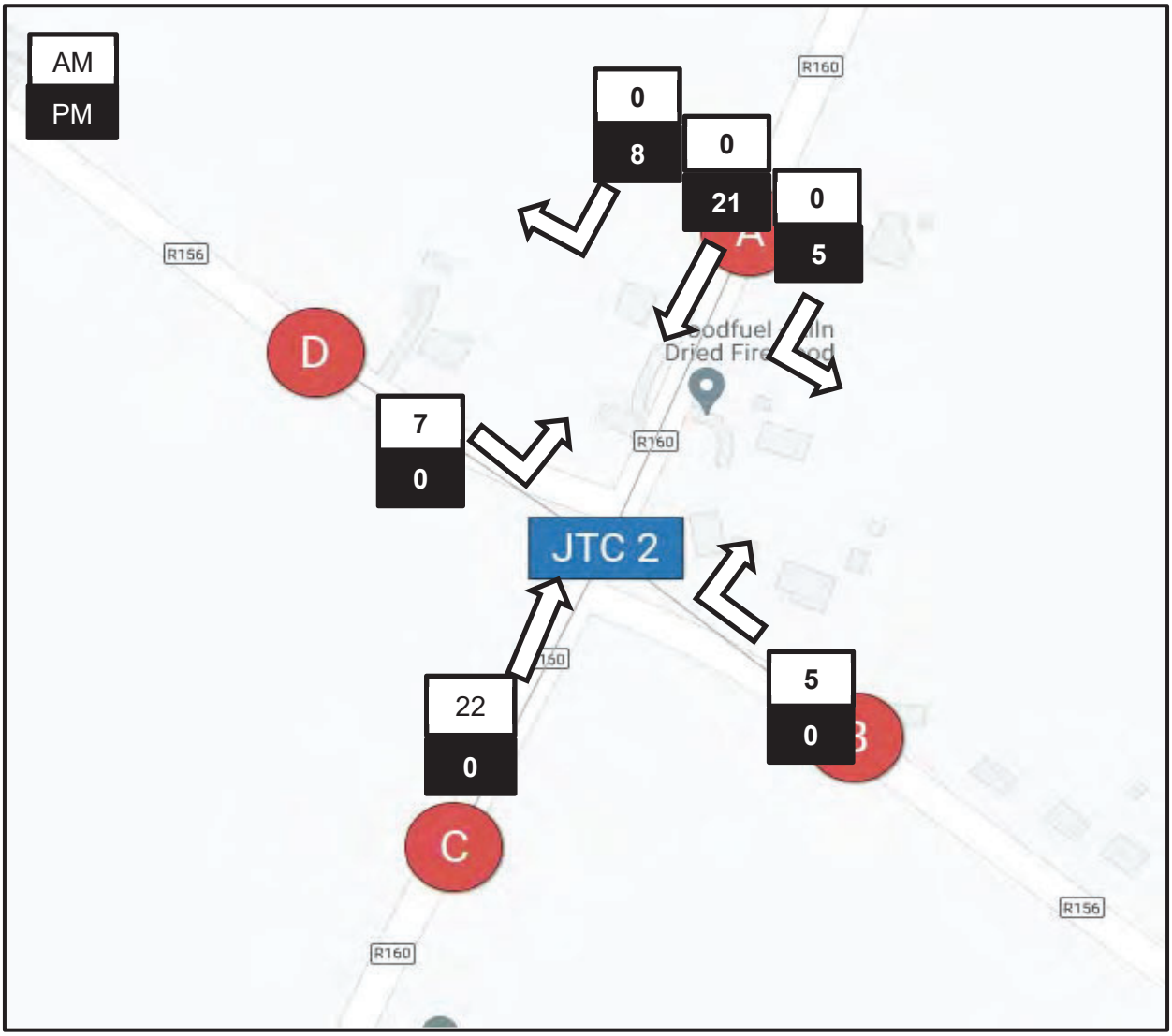

Figure 4.3: Development traffic in JTC2

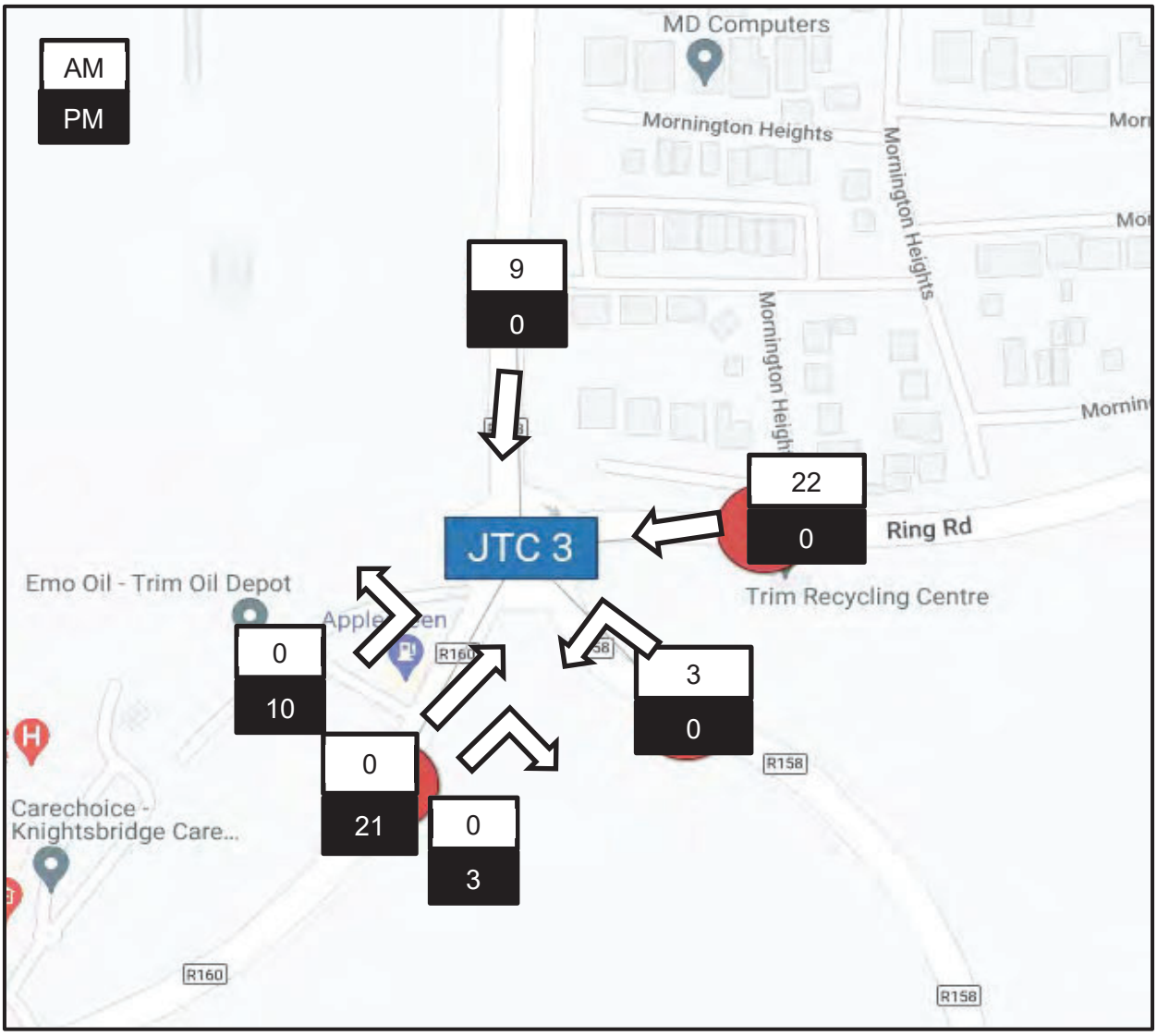

Figure 4.4: Development traffic in JTC3

4.5 Traffic and Transport Assessment Guidelines

The County Meath Development Plan 2021 – 2027, in Section 5 – Movement Strategy, requires a Traffic and Transport Assessment to be provided for proposed trip-intensive developments, "*to accompany planning applications for major developments with significant potential to generate traffic and or which could create a significant hazard or safety performance impact on a major road, particularly national roads*" (Section 11 - Development Management Standards and Land Use Zoning Objectives). It shall be in accordance with the Traffic and Transport Assessment Guidelines (TII 2014).

The TII Publication PE-PDV-02045 Traffic and Transport Assessment Guidelines, published in May 2014, recommends that junction modelling should be carried out where new traffic exceeds 5% of existing flows if congestion already exists and if traffic generated by the development exceeds 10% where no traffic congestion is present, as outlined in **Table 4.9** below. The impact on traffic for the assessed junctions is presented in **Table 4.**.

Table 4.8 – Traffic Impact on Neighbouring Junctions from the development

Junction	2026 Projected Traffic		Traffic from Development		Increase in Traffic		TII Threshold of 5%	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
JTC1	608	687	34	34	5.59%	4.95%	Above	Below
JTC2	914	1004	17	17	1.86%	1.69%	Below	Below
JTC2	1605	1771	17	17	1.06%	0.96%	Below	Below

As can be seen from **Table 4.7**, the anticipated traffic from the development is not expected to adversely affect the operational efficiency of the existing 4-arm junctions, with an increase of no more than 1.86% compared to the predicted traffic for 2026. Both 4-arm junctions already experience daily traffic. The rise in traffic due to the proposed development remains well below the Transport Infrastructure Ireland (TII) threshold of a 5% increase for junction modelling at the existing 4-arm junctions.

For the 3-arm Site Access/R160 junction at the frontage of the site (Junction 1), the rise in traffic due to the proposed development is slightly above the TII threshold, with an increase of 5.59% compared to the predicted traffic for 2026.

Table 4.9 – Traffic Management Guidelines Thresholds for Transport Assessments (TII)	
No	Traffic to and from the development exceeds 10% of the traffic flow on the adjoining road.
No	**Traffic to and from the development exceeds 5% of the traffic flow on the adjoining road where congestion exists, or the location is sensitive**
N/A	Residential development in excess of 200 dwellings
N/A	Retail and leisure development in excess of 100m^2
N/A	Office, education and hospital development in excess of 2,500m^2
N/A	Industrial development in excess of 5,000m^2
N/A	Distribution and warehousing in excess of 10,000m^2

When comparing the traffic to/from the development with the threshold requirements in **Table 4.8**, it is recommended by the TII that if any of the listed conditions apply to the development then a Traffic and Transport Assessment is required for the development. As can be seen in **Table 4.8**, none of these conditions applies in this case. The development is anticipated to generate greater than 5% increase in traffic at the junction between the R160 and the development access road during the morning peak period, which exceeds the minimum threshold of 5% for a TTA; however, congestion is not expected to occur at this junction.

Nevertheless, to demonstrate that the proposed development will not negatively affect the public roads, a junction modelling was conducted to evaluate the traffic impact generated by the proposed development across all future design years.

5 Capacity Analysis

5.1 Introduction

A capacity assessment was undertaken at 3No. junctions in the vicinity of the site, as previously noted. The performance of the junctions during the AM and PM peak hours was assessed using PICADY for priority junctions for the following design years:

- 2024, the base year
- 2025, the year of construction stage
- 2026, the opening year
- 2031, 5 years after development conclusion
- 2041, 15 years after development conclusion.

Figure 5.1 below shows the junctions in which a traffic simulation was undertaken in order to obtain the Ratio of Flow to Capacity (RFC) and the queue levels to determine if the junctions would cater for the predicted level of traffic by the development.

Figure 5.1: Location of junctions analysed (Source: Bing Maps)

The Ratio of Flow to Capacity (RFC) describes the capacity of each approach to the junction and determines if the junction will cater for the predicted level of traffic. An RFC below 0.85 (85%) implies that an approach road is operating satisfactorily well within capacity; between 0.85 to 1.0 RFC means the approach operates within capacity but at less optimal efficiency; and an RFC above 1.0 means that demand and capacity are equal and no further traffic can progress through the junction.

The queue levels are presented in Passenger Car Unit (PCU) and quantify the total number of vehicles queueing on each arm.

5.2 Traffic Impacts of the Proposed Development on the Local Road Network

As stated in above, traffic counts were undertaken at the 3No. junctions. The cumulative effect of adjacent developments described in **Section 4.2** was considered in the analysis. Central traffic growth rates for Co. Meath, specified in the TII's Publication PE-PAG-02017 of October 2021, were applied to existing background traffic only and were not applied to the development traffic, since it is limited by development size. The capacity assessment was modelled for three different scenarios:

- Base-year: 2026 traffic flows modelled according to traffic counts obtained in 2024, factored up using TII's Growth Factor.
- Do-nothing: modelled without the intervention of the proposed development. For this analysis, the traffic counts were factored up using TII's Growth Factor for the design years 2026, 2031 and 2041.
- Do-something: the impact of the traffic generated by the development was added to the design years 2026, 2031 and 2041. This analysis will enable the comparison with the 'Do-nothing' scenario.

5.2.1 Junction 1 – Site Access/R160

In the following analysis, the arms were labelled as follows:
- Arm A: R160 - Northeast
- Arm B: R160 - Southwest
- Arm C: Site Access

Figure 5.2 depicts the arm names as used in modelling with PICADY software.

Figure 5.2: JTC1 Arm Names (Source: Bing Maps)

Table 5.1 shows the results of the analysis of the junction modelled using PICADY transport modelling software for priority junctions for the assessment year (2024), the year of the construction stage (2025), the expected year of opening (2026), 5 years after the development completion (2031) and 15 years after the development completion (2041) for the 'Do-Nothing' and 'Do-Something' scenarios.

Table 5.1 – *PICADY* Results for JTC1 Analysis

		AM		PM	
Analysis	**Stream**	**Queue (PCU)**	**Rate Flow Capacity (RFC)**	**Queue (PCU)**	**Rate Flow Capacity (RFC)**
1 – 2024, base traffic	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
2 – 2025, do-nothing	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
3 – 2025, do-something	B-AC	0.0	0.0	0.1	0.1
	C-AB	0.1	0.05	0.0	0.0
4 – 2026, do-nothing	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
5 – 2026, do-something	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
6 – 2031, do-nothing	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
7 – 2031 do-something	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
8 – 2041, do-nothing	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0
9 – 2041, do-something	B-AC	0.0	0.0	0.0	0.0
	C-AB	0.0	0.0	0.0	0.0

In 2024, there is no junction present on the R160 road because the existing site access is closed. This is also the case for every Do-Nothing scenario.

Analysis 3 introduces the construction transport traffic from the proposed development in 2025, resulting in a non-significant increase of RFC of 5% (from non-existent to 0.05) in the AM period, and 10% (from non-existent to 0.1) in the PM period.

In the future years, up to 2041, there is no effect to the adjoining road anticipated from the proposed development when in operation. No congestion or queue formation are expected on R160 at the given location, with or without the proposed development.

5.2.2 Junction 2 – R160/ R156

In the following analysis, the junction was assessed for the AM and PM peak period and the arms were labelled as follows:

- Arm A: R160 North
- Arm B: R156 East
- Arm C: R160 South
- Arm D: R156 West

Figure 5.3 depicts the arm names as used in modelling with PICADY software.

Figure 5.3: JTC2 Arm Names (Source: Bing Maps)

Table 5.2 shows the results of the analysis of the junction modelled using PICADY transport modelling software for the assessment year (2024), the year of the construction stage (2025), the expected year of opening (2026), 5 years after the development completion (2031) and 15 years after the development completion (2041) for the 'Do-Nothing' and 'Do-Something' scenarios.

Table 5.2 – *PICADY* Results for JTC2 Analysis					
		AM		PM	
Analysis	Arm	Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
1 – 2024, base traffic	B	0.9	0.42	4.7	0.85
	A	0.1	0.09	0.5	0.25
	D	2.2	0.68	0.4	0.30
	C	0.4	0.15	0.1	0.06
2 – 2025, do-nothing	B	0.9	0.43	5.2	0.86
	A	0.1	0.09	0.6	0.25
	D	2.4	0.70	0.4	0.31
	C	0.4	0.15	0.1	0.06
3 – 2025, do-something	B	1.0	0.45	6.6	0.9
	A	0.2	0.11	0.7	0.28
	D	2.8	0.74	0.5	0.34
	C	0.4	0.16	0.1	0.06
4 – 2026, do-nothing	B	0.9	0.43	5.1	0.86
	A	0.1	0.09	0.6	0.25
	D	2.3	0.70	0.4	0.31
	C	0.4	0.15	0.1	0.06
5 – 2026, do-something	B	0.9	0.43	5.1	0.86
	A	0.1	0.09	0.6	0.25
	D	2.3	0.70	0.4	0.31
	C	0.4	0.15	0.1	0.06
6 – 2031, do-nothing	B	1.1	0.48	11.1	0.97
	A	0.2	0.10	0.7	0.29
	D	3.6	0.79	0.5	0.35
	C	0.4	0.17	0.1	0.07
7 – 2031 do-something	B	1.1	0.48	11.1	0.97
	A	0.2	0.10	0.7	0.29
	D	3.6	0.79	0.5	0.35
	C	0.4	0.17	0.1	0.07
8 – 2041, do-nothing	B	1.3	0.53	21.1	1.06
	A	0.2	0.11	0.8	0.32
	D	5.5	0.86	0.6	0.39
	C	0.5	0.19	0.2	0.07
9 – 2041, do-something	B	1.3	0.53	21.1	1.07
	A	0.2	0.11	0.8	0.32
	D	5.5	0.87	0.6	0.39
	C	0.5	0.19	0.2	0.07

In 2024, traffic counts revealed the maximum capacity of 85% (0.85) at Arm B during the PM peak, while other arms operate efficiently with an RFC value lower than 0.85. The highest observed queueing formation in the morning period is 2.2 PCU's at Arm D (R156 west) and 4.7 PCU's in the evening period at Arm B (R156 east).

Analysis 2, considering committed development, experiences an increase in RFC to 0.86 (86%) in Arm B during the PM period, meaning that the approach operates within capacity but at less optimal efficiency. It is accompanied by a maximum queue of 5.2 PCU's (approximately 30m) at this arm during the PM peak.

In Analysis 8 and the Do-Nothing scenarios, which depict the anticipated traffic conditions in the study area for future 15 years without the proposed scheme in place, the maximum RFC value is 1.06 (106%) on the R156 (east) in the evening, meaning that no further traffic can progress through the junction. In the morning, the highest RFC observed is 0.86 (86%) on the R156 (west). Additionally, the highest observed queueing formation is on the R156: 5.5 PCU's (31m) heading eastbound in the morning, and 21.1 PCU (120m) heading westbound in the evening, in 2041.

Analysis 3 introduces the construction traffic from the proposed development, resulting in increase of RFC up to 4%: from 0.7 (70%) to 0.74 (74%) in the AM period at Arm D, and from 0.86 (86%) to 0.9 (90%) in the PM period at Arm B. Only Arm C in the evening period does not experience any increase in RFC; for all arms in both peak periods, the RFC value is getting higher by 1 – 3% comparing to the Do-Nothing scenario. The highest observed queueing formation is 6.6 PCU's in the evening period at Arm B (R156 east) which is approx. 38m.

In Analysis 5, the proposed unmanned development is presented in its operational stage. The RFC values are dropped by 1 – 4% comparing to the construction stage, e.g., from 74% to 70% at Arm D in the morning and from 90% to 86% at Arm B in the evening. There still is a congestion on R156: on the western side in the morning (2.3 PCU's or 13m) and on the eastern side in the evening (5.1 PCU's or 29m). However, there is absolutely no difference in RFC values or queuing formation between the Do-Nothing and Do-Something scenarios for the year 2026, in other words, the proposed development in its operational stage does not affect the analysed junction.

Looking forward to 2041, Analysis 9 which incorporates traffic from the proposed development, slightly increases the RFC by 0.01 (1%) in Arm B during the PM peak, with no increase in queue, comparing to the Do-Nothing scenario. During the morning peak Arm D is anticipated to operate at capacity with a maximum RFC value of 0.87 (87%) and a queue formation of 5.5 PCUs, equal to 31m.

However, it is important to acknowledge that road R160, on which the proposed development will be located, does not experience congestion in any scenario: the highest RFC value observed at the Arm A and Arm C is 0.32 (32%) in the evening peak in 2041, with or without the proposed substation.

5.2.3 Junction 3 – R160/ R158/ Summerhill Road Roundabout

The junction was assessed for the AM and PM peak and the arms were labelled as follows:

- Arm A: R160 (Ring Road)
- Arm B: R158

- Arm C: R160
- Arm D: R158 (Summerhill Road)

Figure 5.4 depicts the arm names as used in modelling with ARCADY software.

Figure 5.4: JTC3 Arm Names (Source: Bing Maps)

Table 5.3 shows the results of the analysis of the roundabout modelled using ARCADY transport modelling software for the assessment year (2024), the year of the construction stage (2025), the expected year of opening (2026), 5 years after the development completion (2031) and 15 years after the development completion (2041) for the 'Do-Nothing' and 'Do-Something' scenarios.

Table 5.3 – *ARCADY* Results for JTC3 Analysis					
		AM		PM	
Analysis	Arm	Queue (PCU)	Rate Flow Capacity (RFC)	Queue (PCU)	Rate Flow Capacity (RFC)
1 – 2024, base traffic	A	0.5	0.34	0.6	0.37
	B	0.5	0.33	0.9	0.45
	C	0.8	0.44	0.9	0.46
	D	0.2	0.19	0.2	0.19
2 – 2025, do-nothing	A	0.6	0.37	0.7	0.40
	B	0.6	0.38	1.3	0.57
	C	1.0	0.49	1.2	0.54
	D	0.4	0.30	0.4	0.26
3 – 2025, do-something	A	0.7	0.38	0.8	0.42
	B	0.6	0.39	1.4	0.59
	C	1.2	0.52	1.4	0.58
	D	0.5	0.32	0.4	0.27
4 – 2026, do-nothing	A	0.6	0.37	0.7	0.41
	B	0.6	0.38	1.4	0.58
	C	1.1	0.50	1.2	0.55
	D	0.5	0.31	0.4	0.27
5 – 2026, do-something	A	0.6	0.37	0.7	0.41
	B	0.6	0.38	1.4	0.58
	C	1.1	0.50	1.2	0.55
	D	0.5	0.31	0.4	0.27
6 – 2031, do-nothing	A	0.7	0.40	0.8	0.44
	B	0.7	0.42	1.8	0.64
	C	1.3	0.54	1.5	0.60
	D	0.5	0.33	0.4	0.29
7 – 2031 do-something	A	0.7	0.41	0.8	0.44
	B	0.7	0.42	1.8	0.64
	C	1.3	0.54	1.5	0.60
	D	0.5	0.33	0.4	0.29
8 – 2041, do-nothing	A	0.8	0.44	0.9	0.47
	B	0.9	0.46	2.3	0.70
	C	1.5	0.58	1.9	0.66
	D	0.6	0.36	0.5	0.32
9 – 2041, do-something	A	0.8	0.44	0.9	0.47
	B	0.9	0.46	2.3	0.70
	C	1.5	0.58	1.9	0.66
	D	0.6	0.36	0.5	0.32

In Analysis 1, which provides representations of the current year and the anticipated traffic conditions in the study area without the proposed and committed developments, RFC reaches the peak value of 0.44 (44%) in the morning and 0.46 (46%) in the evening for 2024, as indicated in the table above, in Arm C (R160). The highest observed queueing formation is 0.9 PCU's in the evening period at the same arm and arm B (R158).

In Analysis 8 and the Do-Nothing scenarios, which depict the anticipated traffic conditions in the study area for future years without the proposed scheme in place, the maximum RFC value is 0.58 (58%) on the R160 in the morning and 0.7 (70%) on the R158 in the evening for the year 2041. Additionally, the highest observed queueing formation is 2.3 PCU's (13m) on the R158 in the evening period for 2041.

In Analysis 3 and the Do-Something scenario for 2025, which represents the anticipated traffic conditions during the construction of the substation, there was an increase in RFC at all four arms during both the morning and evening periods. The maximum increase was by 3% (from 0.49 to 0.52) in the morning and by 4% (from 0.54 to 0.58) in the evening on the R160. This was accompanied by morning peak queueing formation of 1.2 PCU's, equivalent to 7m, on the R160, and evening peak queueing formation of 1.4 PCU's, equivalent to 8m, on both R158 and R160.

In Analysis 5 and the Do-Something scenario for 2026, which represents the anticipated traffic conditions with the proposed scheme implemented, there was no increase in RFC or queueing formation comparing to the Do-Nothing scenario (without the proposed development). If we compare the construction (2025) and post-construction (2026) traffic conditions, there is a decrease by 2% (from 52% to 50%) during the morning peak and by 3% (from 58% to 55%) during the evening period on the R160 Road, and by 1% at all other arms. The queue formation will also decrease at Arm A and Arm C, and remains at the same level at Arms B and Arm D.

Looking ahead to the design year 2041 in Analysis 9, the analysed junction did not see a rise in RFC or queueing formation, comparing to the Do-Nothing Scenario for the same year. The maximum RFC value is below 85% indicating that the roads are operating satisfactorily well within capacity. The highest expected queueing formation is 2.3 PCU, with or without the proposed development. Hence, the proposed development, after the construction is completed, is not expected to negatively affect the roundabout of interest.

6 Conclusions

The main conclusions of this study are summarised as follows:

- This Traffic and Transport Assessment was conducted to accompany the planning application for a proposed new Distribution Substation near Fosterstown, Co. Meath.
- The development will consist of a control room, MV Switchgear room, HV Cable room and other ancillary facilities. Overall distribution centre will provide 1288 m^2 of area, along with upgrading of site access and all associated site works and services.
- The proposed development will have no dedicated car parking spaces as the substation will be unmanned. During the construction, there will be temporary parking spaces provided.
- ORS liaised with the local authority to scope the requirements for the Traffic and Transport Assessment (TTA), and it was agreed that this report would focus on 3No. key-junctions: the R160/ Site access T-junction (JTC1), the 4-arm R160/ R158 junction to the south of the site (JTC2), and the R160/ R158/ Summerhill Road Roundabout to the north of the site (JTC3).
- The chosen junctions were subjected to capacity analysis to examine the potential traffic levels generated from the development to the existing road network.
- Automatic junction turning counts (JTCs) were undertaken by a third-party company named IDASO, on Wednesday the 8th of May, at the junctions mentioned above. The AM and PM traffic peak periods were identified along the junctions and occurs between 08:00 and 09:00 in the morning in Junction 1 and Junction 3 and between 07:45 and 08:45 in Junction 2. The PM peak occurs between 16:45 and 17:45 in Junction 1 and Junction 2 and between 16:30 and 17:30 in Junction 3. The peak flows indicated high traffic flow numbers for junctions JTC2 and JTC3 with especially high volumes of traffic to/from Trim.
- The Meath County Council planning website was consulted to obtain information about committed developments near the proposed site to be included in this traffic analysis. It was found that 1No. granted planning application will make use of the Junction 3, therefore, it was included in future scenarios of the junction's modelling.
- The traffic splits in the examined junctions could be calculated from the traffic counts and it is expected that the traffic from the proposed development will follow the same trend. The trip generation from the committed development was assessed from the TRICS database.
- The junctions analysed in this traffic assessment were assessed against the TII threshold and it was found that the development is anticipated to generate greater than 5% increase in traffic at the junction between the R160 and the development access road during the morning peak period; however, congestion is not expected to occur at this junction. Nevertheless, to demonstrate that the proposed development will not negatively affect the public roads, a junction modelling was conducted to evaluate the traffic impact generated by the proposed development across all future design years.
- The junctions were examined using *Junctions 9* (PICADY and ARCADY) software for the AM and the PM peak conditions under conservative future projections and Central background Traffic Growth for the considered year of construction 2025, year of opening 2026, 5-years and 15-years after development conclusion.
- From a transportation planning perspective, the proposed substation is not anticipated to adversely impact the operation of the three junctions under analysis. The existing junctions JCT2 and JCT3 are currently operating below optimal efficiency and have capacity limitations. It is evident from the analysis that the introduction of additional traffic will result in minimal effects on the road network. However, it is important to acknowledge that the 4-arm R160/ R156 junction is currently experiencing heavy traffic volumes. Forecasts indicate that this junction is likely to exceed its capacity limits, leading to queues and delays.

Appendix A – Traffic Data

Traffic data available upon request.

Appendix B – TRICS Data

TRICS data available upon request.

Appendix C – Junctions9 Modelling Data

Junctions9 Modelling data available upon request.

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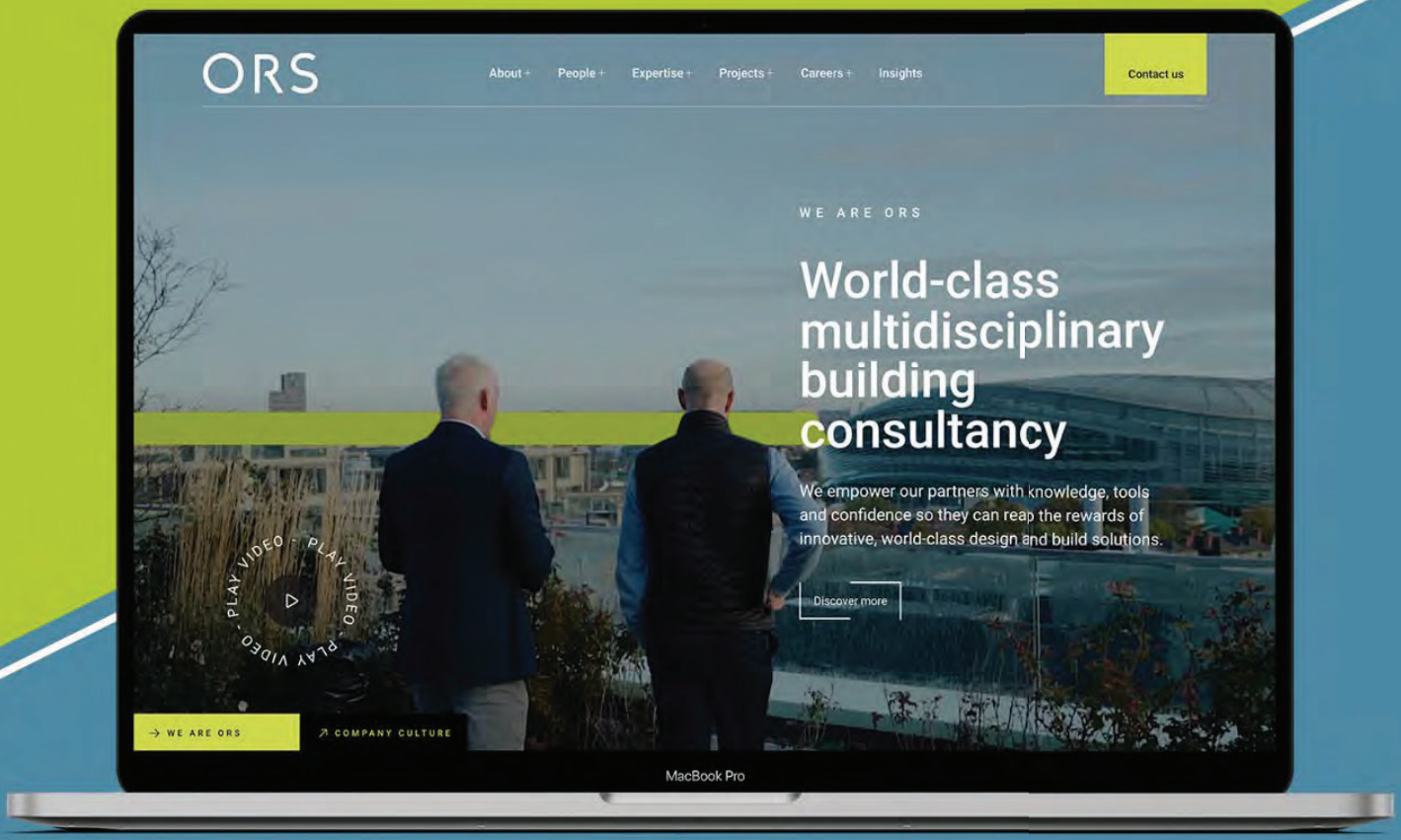

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Appendix F – Cultural Heritage Appraisal

FOSTERSTOWN 110kV/20MW DISTRIBUTION SUBSTATION CARBERRYSTOWN TRIM Co. MEATH

CULTURAL HERITAGE APPRAISAL REPORT

MARTIN E. BYRNE, MA, Dip. EIA Mgmt., MIAI

Report Commissioned by
ESB – Engineering & Major Projects
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JULY 2025

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Martin E. Byrne, MA, Dip. EIA Mgmt, MIAI.

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1. INTRODUCTION

Cultural Heritage has been defined by UNESCO as "the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations" (Tangible Cultural Heritage, UNESCO http://www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage). Cultural Heritage is assumed to include all humanly created features on the landscape, including portable artefacts, which might reflect the prehistoric, historic, architectural, engineering and/or social history of the area. Where appropriate, it also includes for non-physical aspects of heritage, such as history, linguistics, folklore, etc.

The Heritage Act (1995) contains a list of various aspects of heritage, including archaeological monuments and objects, architectural heritage, fauna, flora, geology, heritage gardens and parks, heritage objects, inland waterways, landscapes, monuments, seascapes, wildlife habitats, and wrecks.

The Cultural Heritage of the area of the proposed development was examined through an Archaeological, Architectural, and Historical study. The Archaeological and Architectural studies involved a documentary/cartographic search and focussed field inspection of the area, while the Historical study involved a documentary search.

The chapter discusses the receiving environment from a Cultural Heritage perspective. It provides information with respect to previously identified baseline data and assesses the impact of the proposals on identified sites and areas of Cultural Heritage interest and/or potential.

2. ASSESSMENT METHODOLOGY

The Cultural Heritage components of the study comprise the results of a survey and evaluation of sites of archaeological, architectural and historical potential within, and in the immediate environs of, the proposed development area. The work consists of the results of the paper survey and the field inspection.

2.1 Paper Survey

The Paper Survey comprised documentary, cartographic and aerial photographic research using the following principal sources:

- Record of Monuments and Places – Co. Meath (RMP)
- Sites and Monuments Record (SMR); National Monuments Register, Register of Historic Monuments (RHM) & Lists of Monuments subject to Preservation Orders (PO) – www.archaeology.ie
- Topographical Files of the National Museum of Ireland
- Annual Archaeological Excavations Bulletin – www.excavations.ie

- Cartographic and Aerial Photographic Archive of the Ordnance Survey of Ireland – www.osi.ie
- Satellite Imagery on Google (www.google.ie/maps) and Bing (www.bing.com/maps)
- National Inventory of Architectural Heritage (NIAH) – www.buildingsofireland.ie
- Documentary and cartographic source (see Appendix 1)
- Meath County Development Plan 2021-2027 (MCDP)
- Placenames Database – www.logainm.ie
- Heritage Council Data – www.heritagemaps.ie

2.2 Field Inspection

From the preceding paper survey, a list of cultural heritage sites/sites of cultural heritage potential was compiled for inspection. A field survey of the subject lands and environs was subsequently undertaken in late June 2024; this included a surface reconnaissance survey of the subject development site and visual inspection of the immediate surrounds. It also included examination of soil edges to the drain and soil surfaces to the fields, where exposed.

2.3 Difficulties Encountered

No difficulties were encountered with respect to undertaking of the Paper Survey or subsequent Field Inspection.

2.4 Definition of Study Area

The subject development lands (red-line boundary) and an area of 500km surrounding such lands were determined to be the Study Area for Cultural Heritage. The extent of the Cultural Heritage Study Area was chosen to reflect an appropriate context for the development, beyond which it was considered that a development of this nature would have no direct/indirect impacts.

3. SITE LOCATION & DESCRIPTION

The subject proposed development site is located on lands located approximately 3 km southwest of Trim, Co Meath and on the western side of the R160 Trim -Longwood road (**Figure 1**) and is traversed by the Corduff-Mullingar 110kV overhead transmission line.

The planning application boundary encompasses a *c.* 2.07 ha area of agricultural grassland, comprising parts of two separate fields, both under grass and with an open drain routed along the southern boundary of the northern field; a former residential farmyard (see Sections 4 and 6) located along part of the road frontage boundary, each accessed by separate entrance gates from the road.

The characteristics of the land are typical of other agricultural lands in the area, encompassing improved agricultural grassland, hedgerows, scrub and fence-lines (Plate 1). The level at the centre of the site is approx. 61.81 mAOD Malin Head; site levels range from approx. 60.36 mAOD at the north-eastern boundary to 62.45 mAOD (± 0.05 m) at the western side (Figure 2).

A row of five residential properties is located fronting onto the eastern side of the R160, directly across the road to the proposed site and there are two golf courses located approximately 300m to the southwest and 300m to the northeast. The main land uses within the surrounding area are agricultural, and low density residential.

Figure 1 Site Location

Plate 1 Aerial View of Site and Environs

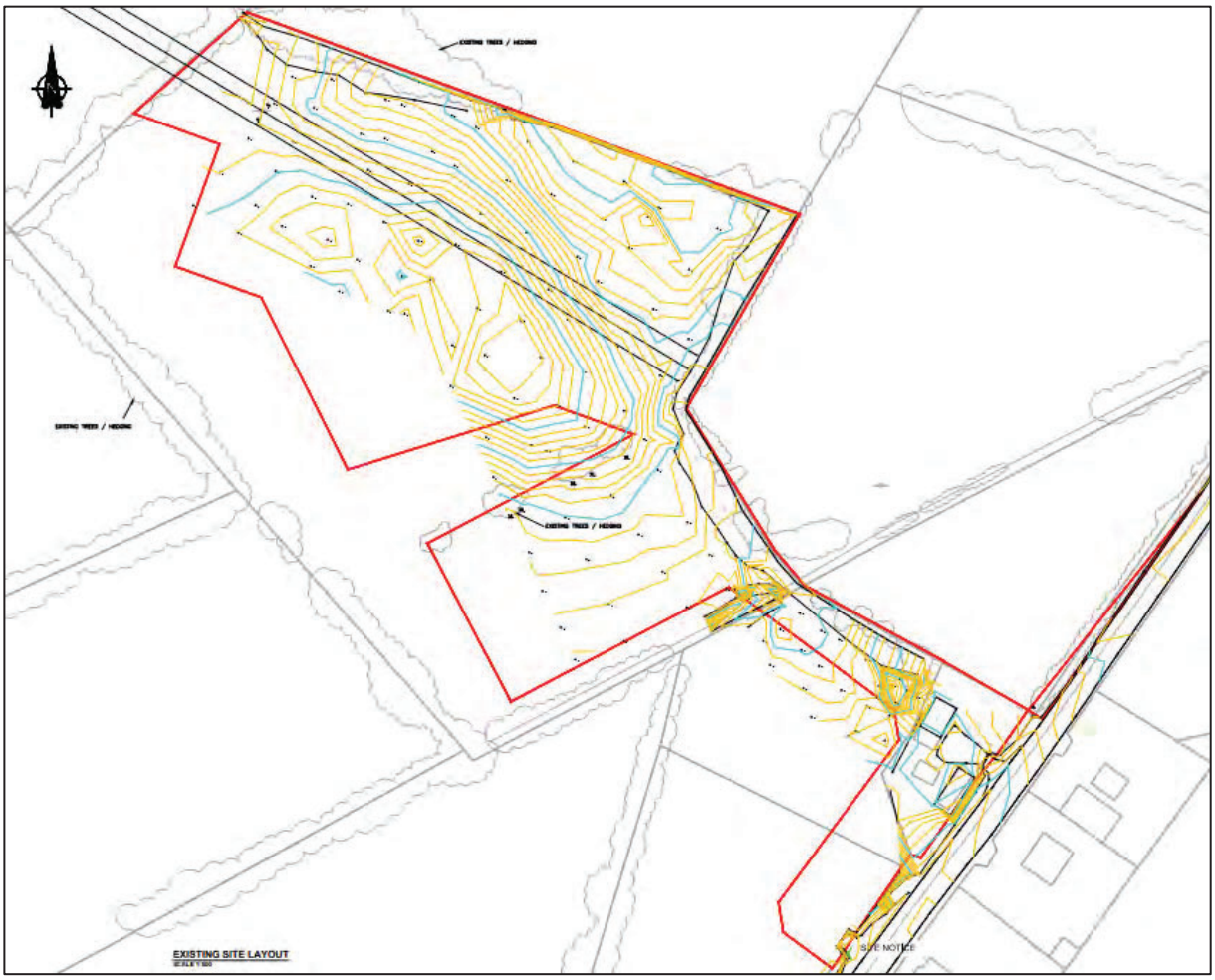


Figure 2 Existing Topographical Layout

Plate 2 General View of Southern Field – from northern corner looking east

Plate 3 Northern Field – from eastern corner looking northwest

4. LOCAL HISTORY

The subject proposed development lands form part of the townland of Carberrystown, in the civil parish of Trim and barony of Moyfenrath Lower; the Placenames Database (www.logainm.ie) considers the townland name to be of English origin.

Evidence for prehistoric activity is relatively sparce in the immediate region of the subject site; ring ditches have been identified at Blackfriary, Trim (SMR No: ME036-097) and Laracor (SMR No: ME036-043002) and a Fulacht Fia at Friarspark (SMR No: ME036-102).

Meath is traditionally said to have been created in the early historic period by *Túathal Techtmar* and the *Uí Enechglaiss* was an early dynasty of the region. Along with the *Uí Failge* and *Uí Bairrche*, they belonged to the *Laigin*. During the early sixth century, they were driven away from their original homeland in Kildare and over the Wicklow Mountains by the *Uí Néill*, whose sept, the *Clann Cholmáin*, took their place. Historically, the region became known as the 'kingdom of Mide' and included all the present counties of Meath, Westmeath and Fingal, as well as parts of counties Cavan, Longford, Louth, Offaly and Kildare. Evidence for activity relating to this period is plentiful, with several ringforts and enclosures dispersed across the landscape, including an enclosure at Carberrystown (SMR No: ME036-042), to the east of the subject site (see Section 5 below). In terms of ecclesiastical history, a monastery was founded at Trim by St. Loman, and is associated, at least from the ninth century, with St. Patrick. Abbots and bishops are recorded from the mid-eighth century; in addition, a house for the Augustinian canons appears to have been founded at Trim before the coming of the Normans and it has been suggested that St. Malachy was the founder (Gwynn & Hadcock, 1970, 195).

Meath is also considered to have been one of five Provinces (Irish: *cúige* meaning "fifths") of Ireland, along with the four current provinces of Connacht, Leinster, Munster and Ulster. The Diocese of Meath established by the Synod of Ráth Breasail in 1111 had boundaries like those of the kingdom. County Meath is known as the Royal County as it was once the territory of the High Kings of Ireland, who resided at Tara.

Following the Anglo-Norman invasions, Henry II granted the ancient 'kingdom of Mide 'to Hugh de Lacy. Under the feudal system, de Lacy divided his 'Liberty of Meath' among his closest allies, his barons, and these land divisions became known as baronies. De Lacy retained control over the barony of Moyfenrath for himself, making Trim the centre of his new lordship; a castle was in existence by 1174, when it was destroyed by the high-king and soon afterwards de Lacy began to build the present stone castle (SMR No: ME036-048004), the oldest and largest surviving castle in Ireland. A substantial town (SMR No: ME036-048) was also established, straddling the River Boyne north and west of the castle; this was later enclosed by a circuit of stone walls with at least five gates, possibly erected by the end of the thirteenth century, following a grant of murage in the 1290s. Dominican, Franciscan and Augustinian friaries were founded in the thirteenth century. In the fifteenth century, it was an important place of pilgrimage because of a famous wooden statue of Our Lady, burnt in 1538 after the Reformation (Cogan, 1887, 392).

The original de Lacy lordship included the townland of Carberrystown and passed through several major English families, including the Mortimers in the fourteenth/early-fifteenth centuries and Richard, Duke of York.

Mac Niocaill (1992, 108) notes that Edmund Lawless and Donald O'Toole occupied lands at "Carbreston" around 1540.

The Civil Survey (aka Down Survey) of 1656-8 notes, with respect to Moyfenrath that "… the soyle of this Barony is generally good arable meadow and pasture but very little or no wood in it. There is store of turf for fireing in most places, no timber, some small quantity of shrubby and underwood…". The Survey notes that 'Carbarberstown' (**Figure 3**) contained 233 plantation acres of 'profitable' lands, with 12 acres described as 'unprofitable'; the landowner in 1641 and 1670 was Robert Dillon.

The *'Abstracts of the conveyances from the trustees of the Forfeited Estates and Interests in Ireland'* for 1703 contains the following with respect to 'Carburystowne'

'47. BRINSLEY BUTLER of Dublin, esq , 7th June 1703; consideration…The town and lands of Forterstowne and Carburystowne, 316 a.; bar. Moyfenrath…the estate of Richard Earl of Tyreconnell, attainted, subject to a lease allowed to Mr. John Percevall, on his claim, for the lives of himself, John and Mary Hawkshaw…'

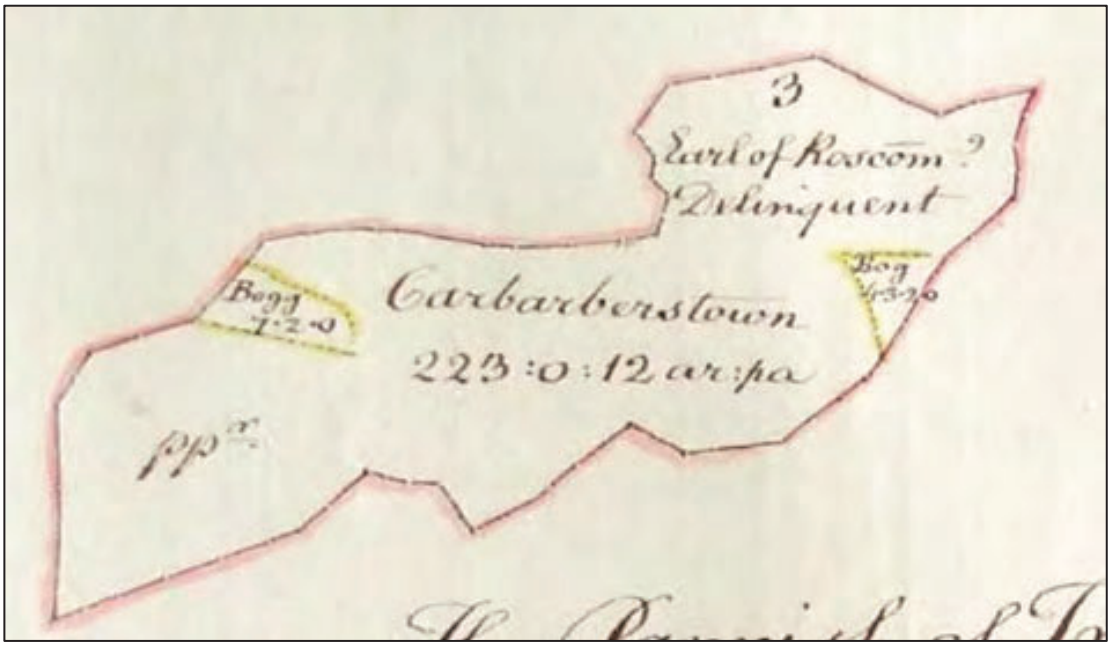


Figure 3 'Carbarberstown' as indicated in the Civil Survey Map of 1656-8

Very little is known about the immediate area in the eighteenth century. Although a few house/structures are indicated on the Grand Jury Map of 1812 (**Figure 4**) as being located at Carberrystown, it is unclear if any are associated with the subject site.

Figure 4 Extract from Grand Jury Map (William Larkin) of 1812 – Meath Sheet 6

The Ordnance Survey 6-inch map of 1836 (**Figure 5**) indicates the layout of the subject site and environs at that time. The existing northern field was formed by two fields and the southern field formed part of a

much smaller field than that exists at present; this latter field incorporates a rectangular plot along part of the road frontage which includes a house. In addition, the road is narrower than that which exists today.

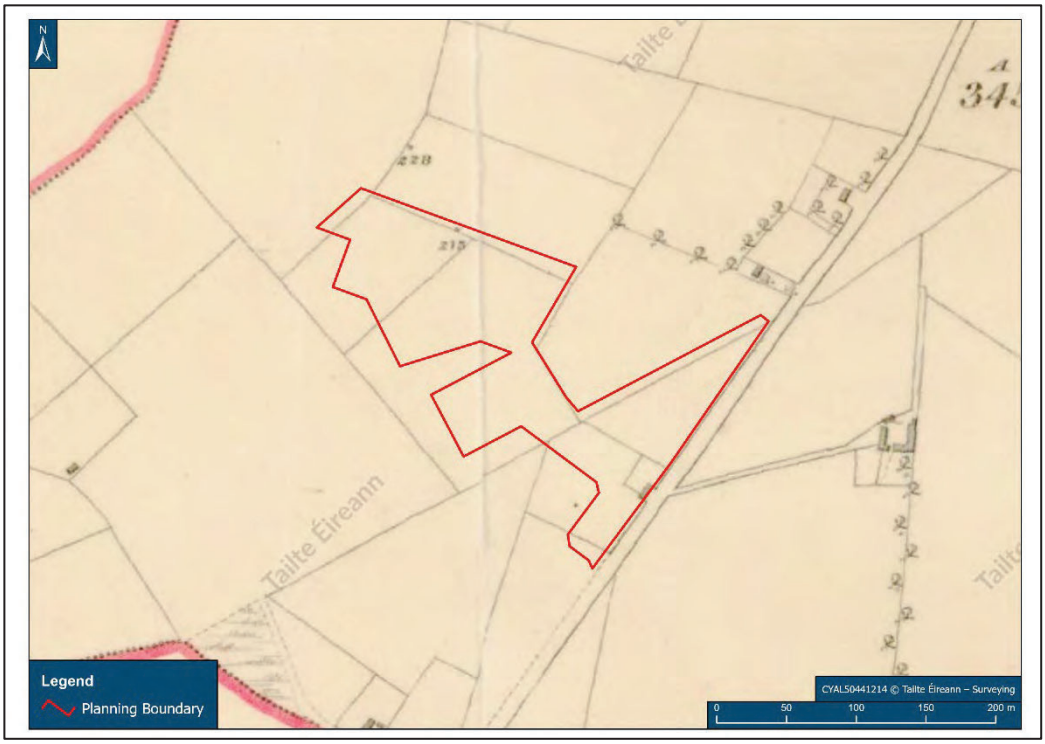


Figure 5 Extract from Ordnance Survey Map of 1836

Lewis (1837, II, 643-45) notes that the parish of Trim had a population of 5926 at that time, of which 3282 resided in the town of Trim; he states that it comprised 12,650¾ statute acres, of which 11,880 were applotted under the tithe act and describes the land as "principally in tillage and of good quality" affording abundant crops with system of agriculture that had "lately improved"; in addition, only a small portion of the land comprised bog.

Griffith's Valuation (*Primary Valuation of Ireland 1848-64*) of 1855 notes that the subject lands formed part of a large landholding owned by Michael Sweetman; the subject lands were occupied by John Cummins who leased had an area of 11 acres, 1 perch, 22 roods and contained a house and office [outbuilding].

Very little changes to the subject lands and environs are evidence on the Ordnance Survey 25-inch map of 1909 (**Figure 6**). The boundary between the northern and southern fields is indicated as a drain/stream, with culvert/bridge providing access between the two. The residential/farmyard plot has been extended to the southwest; a rear extension to the house is indicated, which most likely for agricultural use; in addition, two detached outbuildings are also indicated.

The Ordnance Survey 6-inch map of 1959 (**Figure 7**) indicates that the former field boundary in the centre of the northern area had been removed for form a larger, single field; it also indicates that the 110kV overhead line (OHL) had been established by then. Additional outbuildings are indicated within the residential farmyard plot, including one at the location of the existing open-sided hayshed structure. Some structures are also indicated across the road from the site.

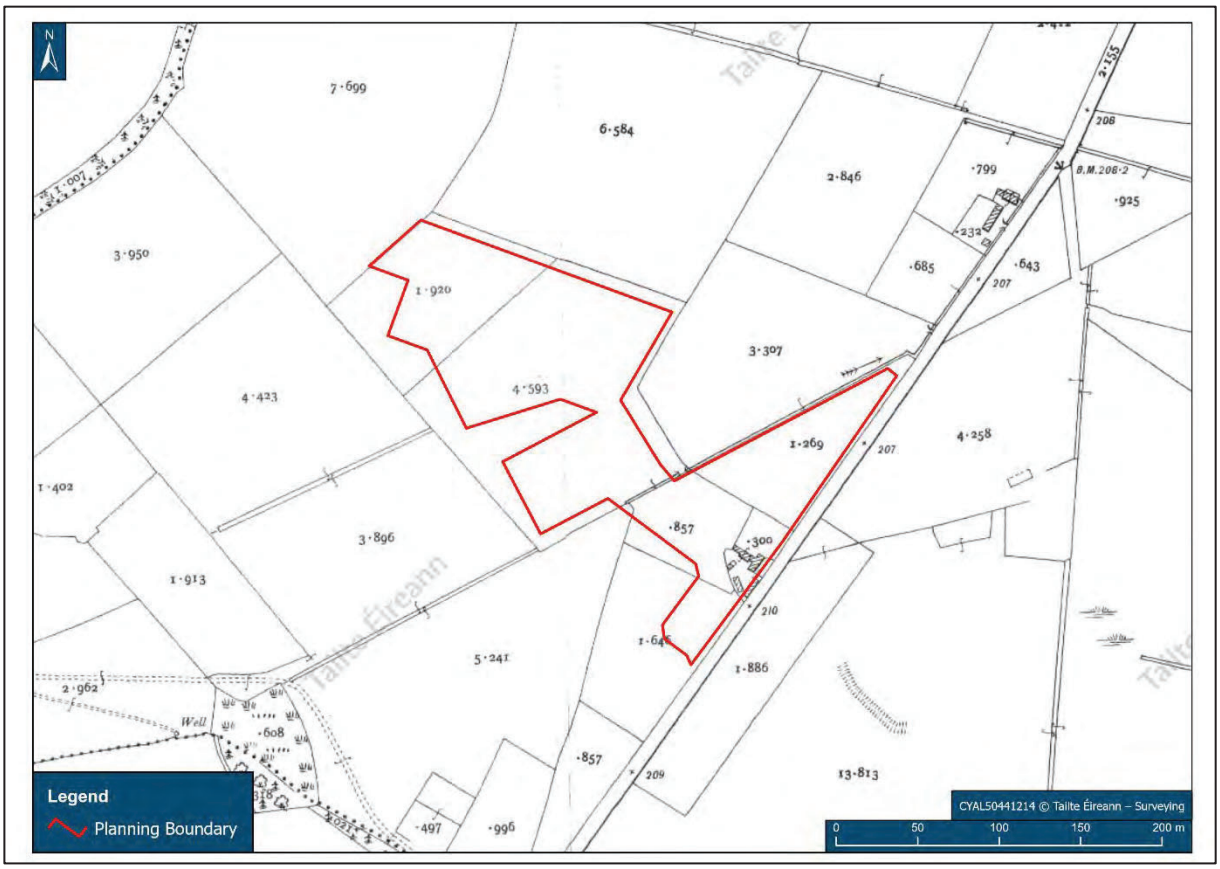


Figure 6 Extract from Ordnance Survey Map of 1909

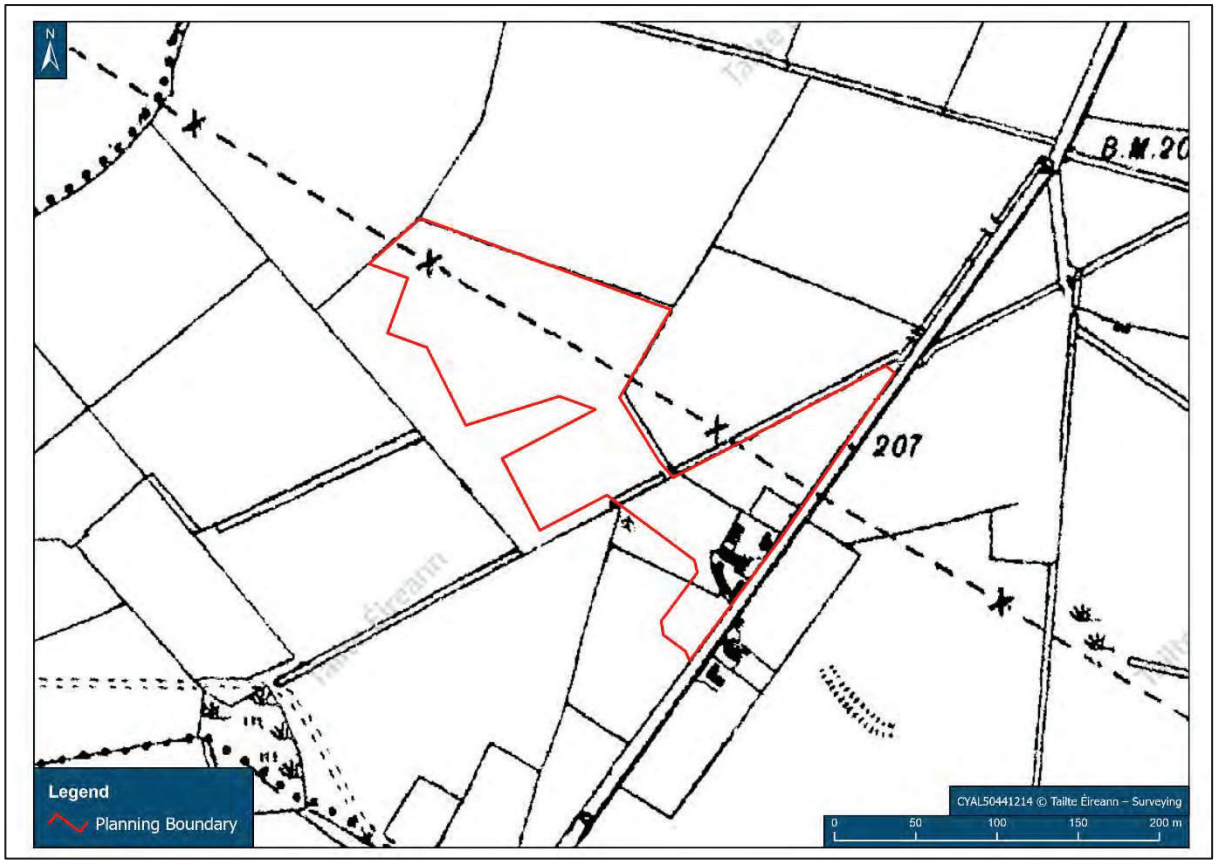


Figure 7 Extract from Ordnance Survey Map of 1959

In more recent years, additional houses have been constructed across the road from the subject site and the road has been widened. A boundary in the southern field was removed to form a larger field. The residential farmyard plot was abandoned and many of the former outbuildings were removed; some additional site clearance works are indicated on an aerial photograph of *c.* 2010 (**Plate 4**), with the associated spoil deposited to the rear of the hay barn structure.

Plate 4 Aerial View of Residential Farmyard – *c.* 2010

5. ARCHAEOLOGICAL HERITAGE

5.1 Introduction

Archaeology is the study of past societies through their material remains and the landscapes they lived in. 'Archaeological Heritage consists of such material remains (whether in the form of sites and monuments or artefacts in the sense of moveable objects) and environmental evidence' (DAHGI, 1999, 9).

Archaeological heritage comprises all material remains of past societies, with the potential to enhance our understanding of such societies. It includes the remains of features such as settlements, burials, ships and boats and portable objects of all kinds, from the everyday to the very special. It also includes evidence of the environment in which those societies lived. The terms "site" or "monument" are used generally to refer to fixed structures or areas of activity, as opposed to particular moveable objects. Historic wrecks are also part of the archaeological heritage (DHLG&H, 2021, 3).

5.2 Statutory Protections

The statutory and administrative framework of development control in zones of archaeological potential or in proximity to recorded monuments has two main elements:

(a) Archaeological preservation and licensing under the National Monuments Acts; and

(b) Development plans and planning applications under the Planning Acts.

5.2.1 National Monuments Acts 1930-2014

Section 12 (1) of the National Monuments (Amendment) Act, 1994 provides that the Minister for the Environment, Heritage and Local Government shall establish and maintain a record of monuments and places where the Minister believes there are monuments, such record to be comprised of a list of monuments and relevant places and a map or maps showing each monument and relevant place in respect to each county of the State. This is referred to as the 'Record of Monuments and Places' (RMP), and monuments entered into it are referred to as 'Recorded Monuments.'

Section 12(3) of the National Monuments (Amendment) Act 1994 provides for the protection of monuments and places in the record, stating that

"When the owner or occupier (not being the Minister) of a monument or place which has been recorded under subsection (1) of this section or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Minister and shall not, except in the case of urgent necessity and with the consent of the Minister, commence work for a period of two months after having given the notice.

5.2.2 Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023

This Act (October 2023) repeals the National Monuments Acts 1930 to 2014 and replaces those Acts with provisions for the protection of historic heritage, provisions for the protection of archaeological heritage,

provisions for the regulation of certain activities in the interests of such protection and provisions enabling the State to ratify or accede to certain international conventions which relate to such protection or regulation; to give effect to the EIA Directive and the Habitats Directive in relation to the carrying out of works at, on, in, under, to, or within the immediate surroundings of monuments; to give further effect to the Valletta Convention; to consequentially repeal or amend certain other enactments; and to provide for related matters.

The Act contains a range of provisions that seek to streamline and simplify existing systems and processes, including the automatic legal protection for finds of archaeological sites, a system of civil enforcement to be used as an alternative to, or to supplement criminal proceedings, and an appeal process for license applications.

In terms of monument protections, the key change will be the creation of a single Register of Monuments to replace the statutory Record of Monuments and Places (RMP) and the non-statutory Sites and Monuments Record (SMR); two levels of protection are provided, Special and General, and automatic protection will be afforded newly discovered monuments.
Although the Act has been signed into law, it will be enabled on a phased basis and the provisions of the National Monuments Acts 1930 – 2014 are still in force.

5.2.3 Meath County Development Plan 2021-2027

The following relevant Archaeological Heritage Policies are set out in Chapter 8.6 of the Plan:

HER POL 1 To protect sites, monuments, places, areas or objects of the following categories:

- Sites and monuments included in the Sites and Monuments Record as maintained by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht;
- Monuments and places included in the Record of Monuments and Places as established under the National Monuments Acts;
- Historic monuments and archaeological areas included in the Register of Historic Monuments as established under the National Monuments Acts;
- National monuments subject to Preservation Orders under the National Monuments Acts and national monuments which are in the ownership or guardianship of the Minister for Culture, Heritage and the Gaeltacht or a local authority;
- Archaeological objects within the meaning of the National Monuments Acts; and Wrecks protected under the National Monuments Acts or otherwise included in the Shipwreck Inventory maintained by the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht.

HER POL 2 To protect all sites and features of archaeological interest discovered subsequent to the publication of the Record of Monument and Places, in situ (or at a minimum preservation by record) having regard to the advice and recommendations of the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht and The Framework and Principles for the Protection of the Archaeological Heritage (1999).

HER POL 3 To require, as part of the development management process, archaeological impact assessments, geophysical survey, test excavations or monitoring as appropriate, for development in the vicinity of monuments or in areas of archaeological potential. Where there are upstanding remains, a visual impact assessment may be required.

HER POL 4 To require, as part of the development management process, archaeological impact assessments, geophysical survey, test excavations or monitoring as appropriate, where development proposals involve ground clearance of more than half a hectare or for linear developments over one kilometre in length; or developments in proximity to areas with a density of known archaeological monuments and history of discovery as identified by a suitably qualified archaeologist.

5.3 Archaeological Inventory

The Archaeological Survey of Ireland (ASI) inventory database is known as the Sites and Monuments Record (SMR). The SMR contains details of all monuments and places (sites) where it is believed there is a monument known to the ASI pre-dating AD 1700 and includes a selection of monuments from the post-AD 1700 period. The RMP (Section 5.1.1 above) is a subset of the SMR; monuments included in the RMP are legally protected and are generally referred to as "Recorded Monuments". The SMR also includes monuments subject to Preservation Orders, including National Monuments. The addition of a monument to the ASI SMR database does not, of itself, confer legal protection. The reclassification of a monument does not affect its legal status in any way.

In terms of the present proposals, there are no previously identified archaeological monuments or structures of industrial archaeological interest located within the subject development site; likewise, no features of archaeological potential were noted by a review of historic cartographic and aerial photographic source material of by the subsequent field reconnaissance survey.

5.3.1 Terrestrial/Industrial Archaeology

There is one monument of terrestrial archaeological interest located within the defined Cultural Heritage Study Area (2.4 above); this is an Enclosure Site (SITE CH-1; SMR No: ME036-042; Carberrystown Td) which is included in the RMP (**Figure 8**); as indicated, the subject planning boundary is outside the RMP Zone.

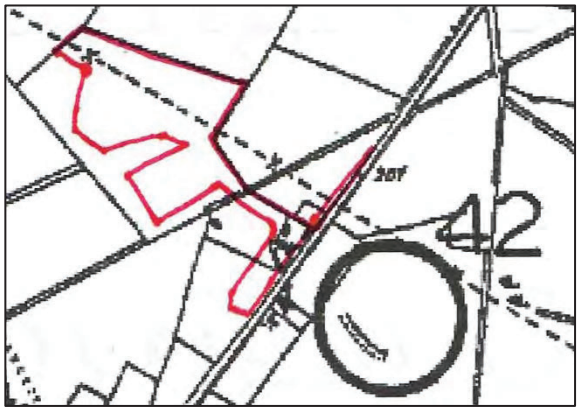


Figure 8 Extract from RMP – Meath Sheet 36

The monument (**SITE CH-**1; ITM (centre-point): 678340 753310) is located to the rear of the residential plots across the road and to the east of the subject site and situated on a locally prominent hillock in a fairly level landscape. A linear fosse (length: *c.* 50m) aligned northwest-southeast is depicted on the 1909 and 1959 Ordnance Survey maps (**Figures 6 & 7** above). The fosse (at south: width of top: 8m; internal depth: 2.7m; external depth: 0.7m) is curving around the base of the hill from southeast – west but it cannot be traced elsewhere. It may have been an outer defence for the rectangular mound (dimensions of base: 23m north-south; *c.* 14m east-west; height: 1.7m) at the hilltop, into which an electrical supply pole has been inserted (Plates X & Y). The closest extent of the monument to the subject site (road frontage/planning boundary) is approximately 64.6m; the extent of the established RMP Zone (**Figure 8**) and SMR Zone of Notification (**Figure 10**) is approximately 52m outside the planning application (red line) boundary.

Plate 5 SITE CH-1 (SMR No: ME036-042) from northwest

Plate 6 Aerial View of SITE CH-1 (SMR No: ME036-042)

5.3.2 Watercourse Related/Underwater Archaeology

There are no previously recorded watercourse related/underwater archaeological sites or features located within the extent of the subject site or wider defined study area

5.4 Results from Previous Documented Archaeological Investigations

A search undertaken of the annual Archaeological Excavations Bulletin (www.excavations.ie) indicates that no licensed archaeological investigations are recorded from within the defined Cultural Heritage Study Area.

5.5 Reported Archaeological Artefacts

A search of the Topographical Files of the National Museum of Ireland determined that no objects have been reported from within the overall defined study area.

6. ARCHITECTURAL HERITAGE

6.1 Introduction

Architectural heritage has several definitions and meanings for people. A useful rule of thumb (which is the legal situation) is set out in the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 which provides the following definition:

a) Structures and buildings together with their settings and attendant grounds, fixtures and fittings,

b) Groups of such structures and buildings, and

c) Sites, which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest.

6.2 Protected Structures

Section 51 of the Planning and Development Act, 2000 (as amended) requires the Development Plan to include a record of structures. These structures form part of the architectural heritage of the County and are to be protected. Meath County Council has drawn up this list, referred to as the Record of Protected Structures (RPS), in which each structure is given a reference number and is a constituent part of the County Development Plan.

There are no structures listed in the Record of Protected Structures (RPS) of the Meath County Development Plan 2021-2027 as being located within the subject study area associated with the project.

6.3 National Inventory of Architectural Heritage (NIAH)

The National Inventory of Architectural Heritage (NIAH) is a state initiative under the administration of the Department of Culture, Heritage and the Gaeltacht. It was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. Its purpose is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage; it also included an Historic Gardens listing. It is intended that the NIAH will provide the basis for the recommendations of the relevant Minister to the planning authorities.

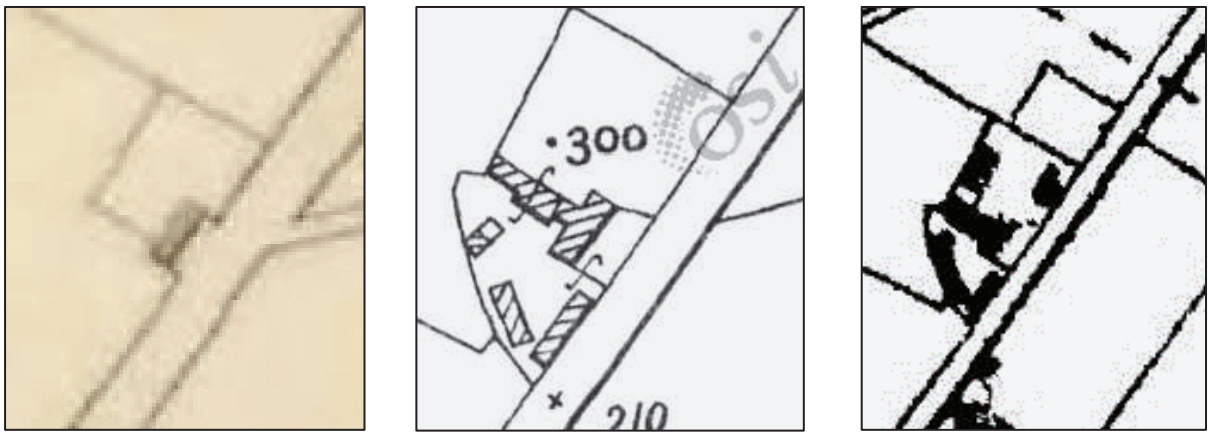
There are no structures of Architectural Heritage interest, or Historic Gardens, listed by the non-statutory NIAH as being located within the subject study area.

6.4 Miscellaneous Structures Within Extent of Planning Boundary

As noted above in Section 4, a house (**SITE CH-2**) is indicated on the 1836 Ordnance Survey map (**Figure 5** above; **Figure 9(a)** below); it is stepped back slightly from, and appears to have an open boundary to, the public road; in addition, it is positioned within a small rectangular plot. Griffith's Valuation of 1855 notes that an associated outbuilding had been constructed by that time.

The 1909 Ordnance Survey map (**Figure 6** above; **Figure 9(b)** below) indicates that the road frontage boundary to the house structure had been established by this time and that s small rear extension to the house had been erected; an outbuilding was erected to the rear of the house and appears to be attached to the rear house extension. Three additional detached outbuildings had been constructed in the southern area of the residential/farmyard plot, one of which was aligned along the road frontage; furthermore, the farmyard plot had been extended to the south/southeast to accommodate these developments.

The 1959 Ordnance Survey map (**Figure 7** above; **Figure 9(c)** below) indicates two additional detached structures had been erected in the northern area of the plot, with some possible extensions to those in the southern/southeastern area.



(a) 1836 **(b) 1909** **(c) 1959**

Figure 9 SITE CH-2: O.S. Map Depictions

All the structures within the farmyard plot were subsequently demolished, apart from the house and a hay barn structure (e.g. **Figure 2** and **Plate 4** above; **Figure 10** below). In addition, the road frontage boundary was subsequently removed and replaced with a concrete post-and-rail fence, the line of which was moved westwards and closer to the façade of the house structure; the existing access gates to the subject lands were established at the time of the road improvement works.

The house (**SITE CH-2**) comprises a partially ruinous gable-ended, structure, with small rear off-centre extension at the northern end; it is rectangular in plan and roughly aligned north-south, with the long sides almost parallel with the road-frontage boundary. The roof is pitched and composed of corrugated iron sheeting, a replacement for the original thatch; it incorporates a slightly off-centre chimney to the south, composed of brick with rough render (**Plate 7**). The external walls incorporate a rough mortared render, which has peeled off in many areas to reveal a cob (earth and stone) structural material, with the basal

areas formed by stone coursing, with some evidence for brick repairs at the southwestern corner (**Plate 8**). There are square window opes in the gables; the one to the south incorporates a timber one-over-one sash window with missing sill (**Plate 9**), with the one to the north largely removed, comprising of only part of the frame and a stone sill (**Plate 10**). The upper areas of the gables are faced with timber panelling (e.g. **Plate 10**). A small lean-to extension to the rear is very overgrown and partially ruinous; there is no evidence for a roof, and the walls appear to be of a cementitious mortar; cartographic evidence indicates that this is of later nineteenth or early twentieth century date.

Plate 7 CH-2: View from east showing roof detail

Plate 8 CH-2: Rear south-western corner

Plate 9 CH-2: South Gable with widow detail

Plate 10 CH-2: Northern Gable – note overgrown rear extension to right

The façade is extremely overgrown, and no features are visible (**Plate 7** above). However, a street-view image from google maps (**Plate 11**) indicates that it appears to incorporate a central lobby entrance with pairs of rectangular window opes to sides; the opes contain one-over-one timber sash windows with stone sills.

Plate 11 CH-2: Façade View from east (*c.* 2020; www.google.ie/maps)

An open-sided hay barn with steel upright and vaulted corrugated roof (**Plate 12**) is located to the northwest of the house

Plate 12 Hay Barn

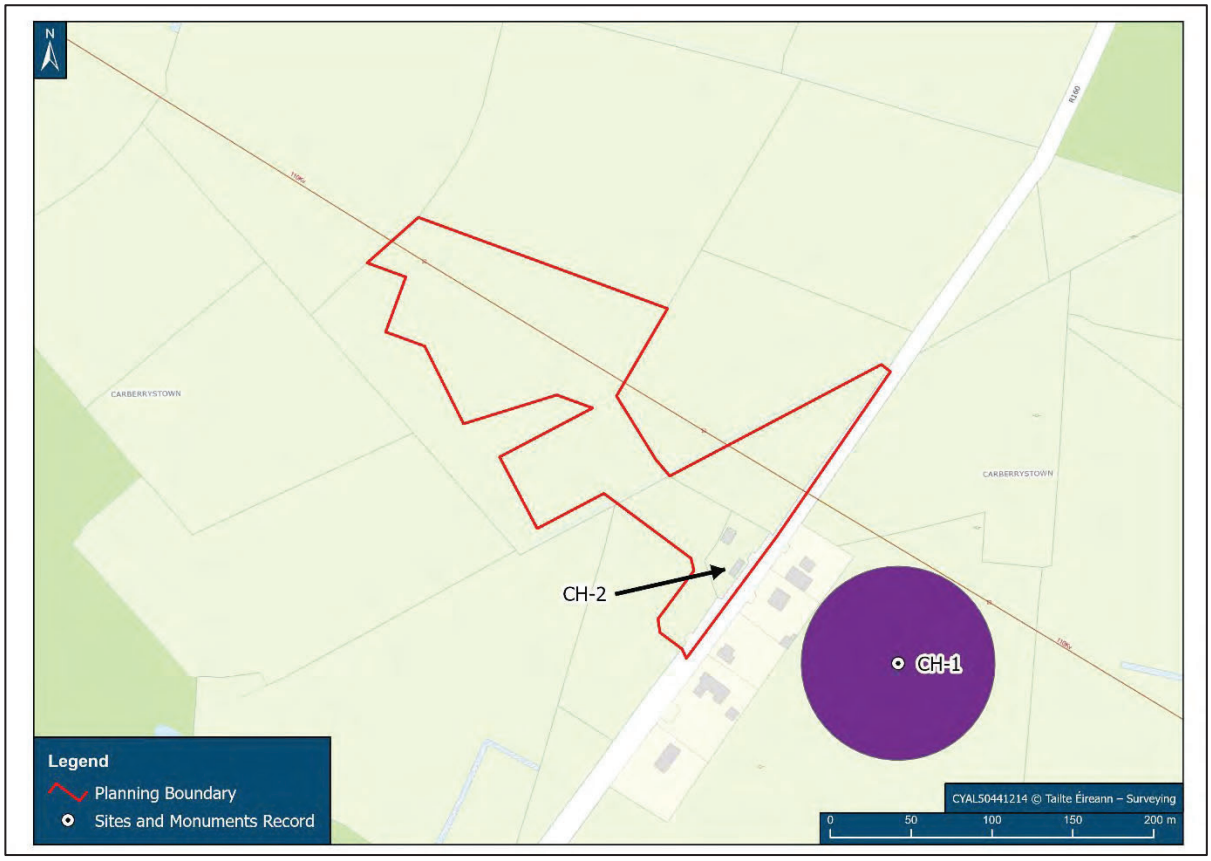


Figure 11 Locations of Cultural Heritage Monuments & Structures within defined study area - Planning Application Boundary outlined in red

7. DESCRIPTION OF DEVELOPMENT

The development will consist of the construction of a new 110 kV Gas Insulated Switchgear (GIS) building located entirely within the site of the red line boundary as indicated (see **Figure 12**) to provide a secure energy supply at this critical location into the future.

The proposed development will include:

- A new indoor GIS building measuring 50.5m x 14.0m x 12.0m
- Installation of new 110 kV electrical transformer equipment.
- All associated construction site works.

The proposed GIS building will measure circa 700 sq.m, with a height of 12 meters. It will also include an element of cladding to the external elevation planes.

The proposed site is traversed by the Corduff-Mullingar 110 kV overhead transmission line and it is intended to loop the proposed substation into this line.

A layout plan of the development, as proposed, is illustrated in **Figure 12**.

Further details of the development, as proposed, are included in Section 3 of the main body of the PECR.

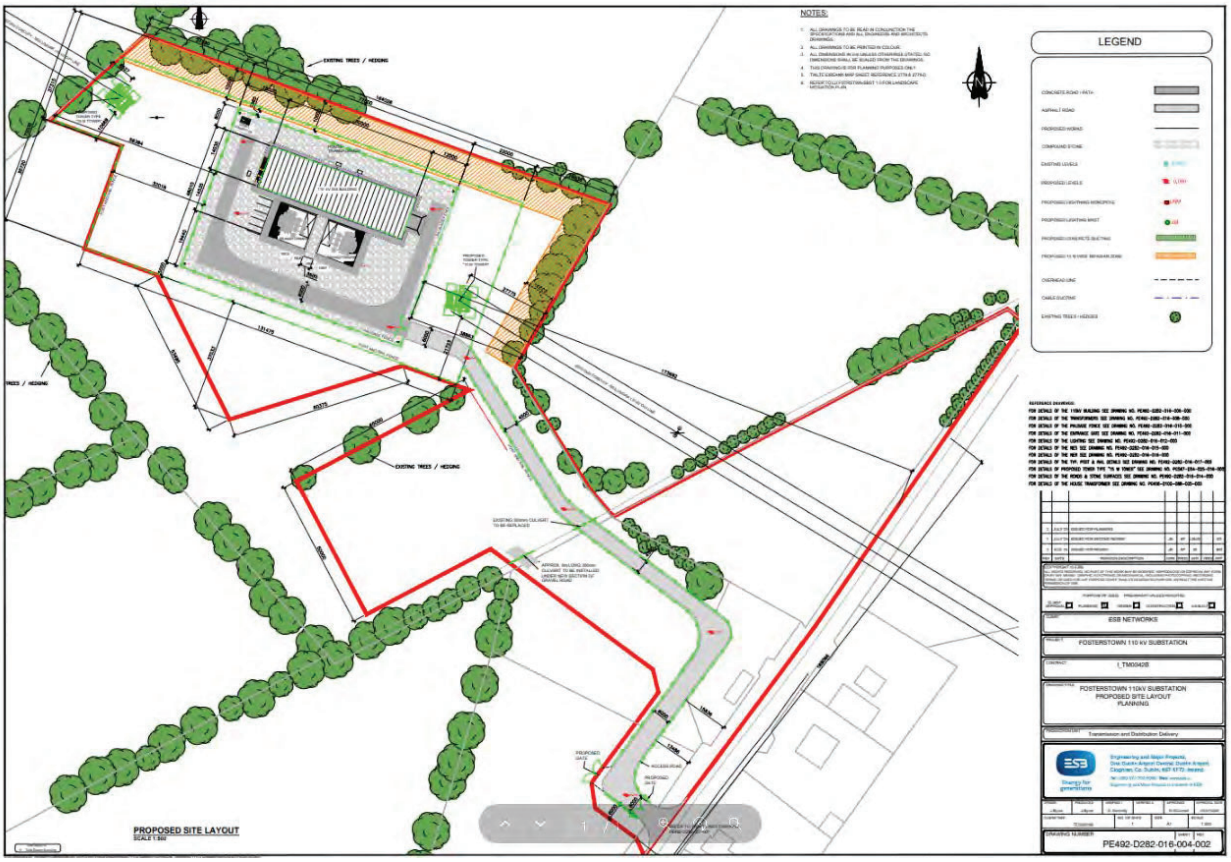


Figure 12 Proposed Layout Plan

8. IMPACTS OF DEVELOPMENT

8.1 Impact Criteria

The methodology used for this assessment is based on EPA (2015) *Advice Notes for Preparing Environmental Impact Statements* and EPA (2022) *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*, in accordance with Environmental Impact Assessment (EIA) requirements of codified EU Directive 2011/92/EU as amended by EU Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: Planning and Development Act, 2000 (as amended) (Part X) and in Part 10 of the Planning and Development Regulations, 2001 (as amended).

The following summation of the criteria applied to determine the nature of effects is provided to clearly and concisely outline the methodology specifically applied to the cultural heritage resource. Assessment was achieved by a consideration of the duration, quality, type, value and magnitude of effect(s) on the cultural heritage resource:

Duration of Effect

The duration of effects is assessed based on the following criteria:

• Momentary (seconds to minutes)

• Brief < 1 day • Temporary 60 years.

• Reversible: Effects that can be undone, for example through remediation or restoration Quality of Effect The quality of an effect on the cultural heritage resource can be positive, neutral or negative.

• Positive – a change which improves the quality of the cultural heritage environment (e.g. increasing amenity value of a site in terms of managed access, signage, presentation etc. or high-quality conservation/restoration and re-use of an otherwise vulnerable derelict structure).

• Neutral – no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment.

• Negative – a change which reduces the quality of the cultural heritage resource (e.g. visual intrusion on the setting of an asset, physical intrusion on features/setting of a site etc.)

The type of effect on the cultural heritage resource can be direct, indirect or no predicted effect.

• Direct – where a cultural heritage site is physically located within the footprint of the development, which will result in its complete or partial removal.

• Indirect – where a cultural heritage site, or its setting, is near the footprint of the development.

• No predicted effect – where the development will not adversely or positively affect a cultural heritage site.

Significance of the Effect

This is based on an assessment of the Magnitude of the Impact (graded from High to Negligible, based on a consideration of character, duration, probability and consequences) and the Value (graded from High to Negligible, based on a consideration of significance/sensitivity) of the heritage asset.

The Magnitude of Impact is based on the degree of change, incorporating any mitigation measures, which can be negative or positive, and is ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible.

The evaluation of the Value/Significance of a cultural heritage asset is based on its significance criteria, which is not to be considered definitive but rather an indicator that contributes to a wider judgment based on the individual circumstances of each asset. Generally, the more criteria that are evident for a given asset, the higher in scale its respective Value is adjudged. Criteria considered in addition to any legal designations include the condition/preservation; documentary/historical significance; group value; rarity; visibility in the landscape; fragility/vulnerability and amenity value.

The Value/Significance of all known or potential assets that may be affected by a development are ranked according to the following scale: High; Medium; Low and Negligible.

The criteria outlined in Table 3 have been informed by the International Council on Monuments and Sites Guidance on Heritage Impact Assessments for Cultural World Heritage Properties (ICOMOS 2011, 14-17).

Value	Asset Type
Very High	• World Heritage Sites (including Tentative List properties) • Assets of acknowledged international importance, including buildings. • Assets that can contribute significantly to acknowledged international. • research objectives
High	• Designated National Monuments (archaeological) • Assets of significant quality and importance, including designated RMP sites • Assets that can contribute significantly to acknowledged national research objectives. • Protected Structures/National Grade NIAH Buildings • Conservation Areas containing significant buildings of national importance, including group value. • Archaeological Landscapes with significant inter-group value
Medium	• Assets of good quality and importance, including designated RMP sites • Assets that can contribute significantly to acknowledged regional research objectives.

	• Regional Grade NIAH Buildings • Other undesignated buildings that can be shown to have exceptional qualities in their fabric or historical associations. • Undesignated structures of potential national importance (archaeological, potential 'new sites') • Conservation Areas containing buildings that contribute significantly to a region's historic character. • Historic townscapes or built-up areas with important historic integrity in their buildings, or built settings (e.g., including street furniture and other structures)
Low	• Designated and undesignated assets of local importance, including buildings. • Assets compromised by poor preservation and/or poor survival of contextual associations. • Assets of limited value, but with potential to contribute to local research objectives. • Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g., including street furniture and other structures)
Negligible	• Assets with very little or no surviving archaeological interest • Buildings of no architectural or historical note; buildings of an intrusive character
Unknown	• The nature of the resource has yet to be fully ascertained, e.g. sites or areas of specific archaeological potential, greenfield areas or riverine / stream / coastal environs with inherent archaeological potential. • Structures with potential historic significance (possibly hidden or inaccessible).

Table 3 Definition of criteria terms relating to the Value of the Cultural Heritage Asset

The significance of the effect upon Cultural Heritage is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The following Table 10.4 from EPA, 2022, Table 3.4) provides the baseline criteria used to describe the impacts (effects) that the proposed development will have on Cultural Heritage Sites, Structures and Features.

Significance	Description
Imperceptible	An effect capable of measurement but without significant consequences
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Very	An effect which, by its character, magnitude, duration or intensity significantly alters

Significant	most of a sensitive aspect of the environment.
Profound	An effect which obliterates sensitive characteristics

Table 4 Significance of Effects

Magnitude of Impact	**High**	Not Significant/ Slight	Moderate/ Significant	Significant/ Very Significant	Very Significant/ Profound
	Medium	Not Significant	Slight	Moderate/ Significant	Significant/ Very significant
	Low	Not Significant/ Imperceptible	Slight/ Not Significant	Slight	Moderate
	Negligible	Imperceptible	Not Significant/ Imperceptible	Not Significant/ Slight	Slight
		Negligible	**Low**	**Medium**	**High**
		Value/Sensitivity of the Asset			

Table 5 Assessment of Significance of Effects Matrix (after EPA 2017)

8.2 Construction Phase

8.2.1 Local History: The general historical background to development area is discussed above in Section 4. In summary, there are no significant historical events associated with the subject development area which could be impacted upon by the construction of the proposed development. Consequently, it is considered that there are no predicted impacts with respect to Historical Heritage regarding the proposed construction phase of the development. The impact can be stated as **Neutral with no significant effect.**

8.2.2 Archaeological Heritage: The general archaeological background to the subject development area in discussed above in Section 5.

In terms of terrestrial and industrial archaeological heritage, there are there are no previously identified archaeological monuments or structures of industrial archaeological interest located within the subject development site; likewise, no features of archaeological potential were noted by a review of historic cartographic, aerial photographic and satellite imagery source material of by the subsequent field reconnaissance survey.

There is one monument of terrestrial archaeological interest located within the defined Cultural Heritage Study Area (2.4 above); this is an Enclosure Site (SITE CH-1; SMR No: ME036-042; Carberrystown Td) which is included in the RMP. The closest extent of the monument to the subject site (road frontage/planning boundary) is approximately 64.6m; the extent of the established RMP Zone and SMR Zone of Notification is approximately 52m outside the planning application (red line) boundary. It is considered that his monument is of Medium Value/Significance.

In terms of Marine/Underwater Archaeology, several wrecks are recorded in the general area of the subject site, none of which are located within the defined Cultural Study Area.

No predicted direct impacts will occur with respect to the identified Archaeological Heritage Monument (CH-1) during the construction phase of the development. The effect can be stated as **Neutral with no significance**.

8.2.3 Architectural Heritage: The architectural heritage background to the subject development area is discussed above in Section 6. As noted, there are no structures located within the subject site or wider study area listed in the Record of Protected Structures (RPS) of the Meath County Development Plan 2021-2027; likewise, there are no structures of architectural heritage interest, or historic gardens, listed by the National Inventory of Architectural Heritage (NIAH) within the overall defined study area.

There are two structures (house – CH-2; hay barn) located within the site boundaries, both associated with a former residential farmyard adjacent the public road. The house (CH-2) is a partially ruinous gable-ended, entrance-lobby cottage, largely constructed of cob with basal stone walls and covered with a rough render with replacement corrugated pitched roof and later rear lean-to extension; it is considered that this early nineteenth century structure, which is an undesignated cultural heritage asset of poor preservation is of Low Value/Significance and of local interest only; this will be retained *in situ* as part of the development proposals. The hay barn structure is of late twentieth century date and of no architectural or historical note; it will be removed as part of the overall development as it is positioned along a section of the access road.

Given the above, it is considered that no predicted direct impacts will occur with respect to Architectural Heritage during the construction phase of the development. The effect can stated as **Neutral and of no significance.**

8.3 Operational/Post-Construction Phase

There are no extant monuments or structures of historical, archaeological or architectural heritage interest located within the extent of the proposed planning application boundary; one monument (Site CH-1) is located to the east and to the rear of a row of residential plots along the eastern side of the public road and not readily visible from the subject site. Furthermore, there are no Protected Structures of NIAH-listed structure or landscape features located within the subject site or wider study area. The site contains an undesignated early nineteenth century ruinous cottage of poor preservation which will be retained as part of the overall proposals.

Given the above, it is considered that the various proposed elements of the proposed development, will not cause any adverse visual impact to the setting or general views of or from any monuments, sites or features of archaeological interest or protected/designated structures and that no predicted visual impacts will occur with respect to historical, archaeological or architectural heritage relating to the operational/post-construction phase of the development. The impact can be stated as **Neutral with no significant effect.**

8.4 Do-Nothing Scenario Impact

The “do nothing” scenario is the outcome that would be achieved if the proposed development were not constructed. In terms of Cultural Heritage, no impacts (direct or visual) will occur.

9. MITIGATION

As noted above in Sections 8.2.1 and 8.3, it is considered that there are no predicted impacts with respect to Historical Heritage regarding the proposed construction and post-construction/operational phases of the proposed development. Consequently, it is considered that no mitigation measures are required.

IN terns of Archaeological Heritage, it is considered, as noted above in Sections 8.2.2 and 8.3, that there are no predicted impacts with respect to previously identified archaeological monuments, sites or features of archaeological interest by the proposed construction and post-construction/operational phases of the developments. In general, ground reductions associated with a development of this kind, in areas of previous generally undisturbed ground, can uncover and disturb hitherto unrecorded subsurface features,

deposits, structures and finds of archaeological interest and potential, although it is considered that this site is of low archaeological potential. Without the adoption and implementation of a suitable mitigation strategy, any subsurface archaeological features or artefacts that might be located within the site during the construction phase of the development might not be identified and recorded.

Likewise, as noted above in Sections 8.2.3 and 8.3, no direct or indirect (visual) impacts will occur to any structures or features of Architectural Heritage interest designated as 'Protected' in the County Development Plan or listed by the NIAH

Consequently, given the above, the following mitigation measures, based on OPR Practice Note PN03: Planning Conditions (October 2022), are suggested:

1. The developer shall engage a suitably qualified archaeologist (licenced under the National Monuments Acts) to monitor all site clearance and topsoil stripping required of the development. The use of appropriate machinery to ensure the preservation and recording of any surviving subsurface archaeological remains shall be necessary. No subsurface work shall take place in the absence of the archaeologist without his/her express consent.
2. Prior to the commencement of any works in the vicinity of SITE CH-2, the structure should be protected from accidental damage by the installation of the temporary protective barriers around the southern, western and northern sides.
3. Should archaeological remains be identified during archaeological monitoring, all works in the area of archaeological interest shall be suspended, pending a decision of the Planning Authority, in consultation with the National Monuments Service, Department of Housing, Local Government and Heritage.
4. The developer shall facilitate the archaeologist in recording any remains identified. Any further archaeological mitigation measures specified by the Planning Authority, following consultation with the National Monuments Service, shall be complied with by the developer.
5. Following the completion of all on-site archaeological interventions and any necessary post-excavation specialist analysis, the Planning Authority and the National Monuments Service shall be furnished with a final archaeological report describing the results of the monitoring and any other archaeological investigations/interventions that might subsequently have been required. All resulting and associated costs shall be borne by the developer.
6. The Construction Environmental Management Plan (CEMP) shall include the location of all archaeological and architectural heritage constraints relevant to the proposed development. The CEMP shall clearly describe all identified likely archaeological and architectural impacts, both direct and indirect (visual), and all mitigation measures to be employed to protect the archaeological/architectural heritage environment during all phases of site preparation and construction activities.

10. RESIDUAL IMPACT

It is not envisaged that any negative residual effects will occur with respect to Cultural Heritage because of the project proceeding as proposed.

11. CUMULATIVE IMPACT

The cumulative impact of the proposed development and other existing and/or approved developments in the area was assessed by considering the existing baseline environment and the predicted impacts of this and other approved developments in the area.

It is not envisaged that any negative cumulative effects will occur with respect to Cultural Heritage because of the project proceeding as proposed.

APPENDIX 1

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Appendix G – Landscape and Visual Impact Assessment

LVIA

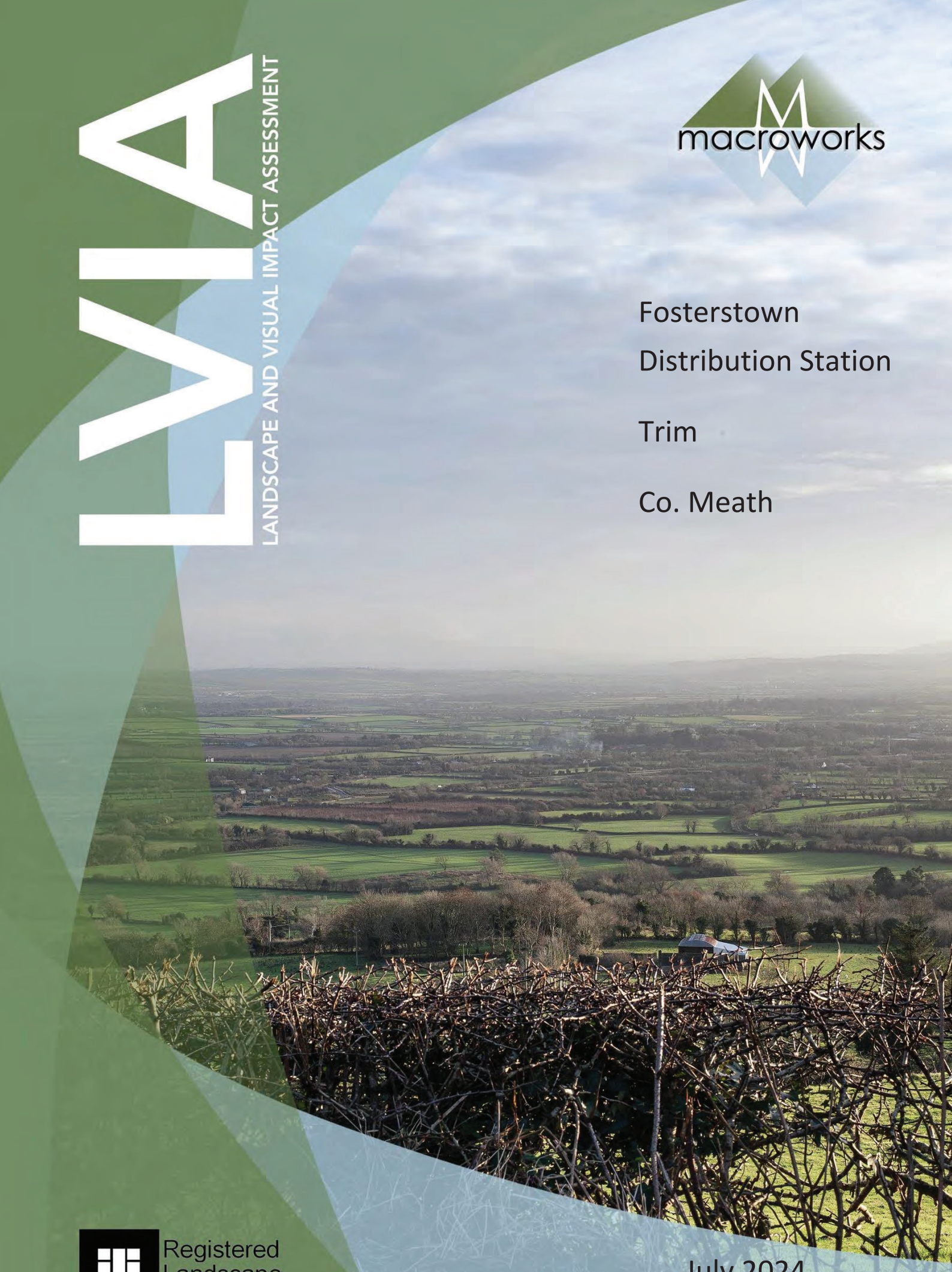
LANDSCAPE AND VISUAL IMPACT ASSESSMENT

macroworks

Fosterstown
Distribution Station

Trim

Co. Meath



Registered
Landscape
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July 2024

LANDSCAPE AND VISUAL ASSESSMENT

1 INTRODUCTION

This Landscape and Visual Assessment (LVIA) has been prepared in respect of a planning application for a electrical distribution station near Trim, Co. Meath. The LVIA report describes the landscape context of the proposed development and assesses the likely landscape and visual impacts of the proposed development on the receiving environment. Although closely linked, landscape and visual impacts are assessed separately.

Landscape Impact Assessment (LIA) relates to assessing effects of a development on the landscape as a resource in its own right and is concerned with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

Visual Impact Assessment (VIA) relates to assessing effects of a development on specific views and on the general visual amenity experienced by people. This deals with how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements. Visual impacts may occur from; Visual Obstruction (blocking of a view, be it full, partial or intermittent) or; Visual Intrusion (interruption of a view without blocking).

This LVIA uses methodology as prescribed in the following guidance documents:

- 'Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)', EPA, 2003;
- 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports', EPA, May 2022;
- Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, Landscape Institute and Institute of Environmental Management and Assessment (IEMA); 2013; and
- Landscape Institute Technical Guidance Note TGN 06/19 Visual Representation of development proposals (Landscape Institute and the Institute of Environmental Management and Assessment, 2019).

1.1 STATEMENT OF AUTHORITY

This LVIA was prepared by Macro Works Ltd. Relevant experience includes landscape and visual assessments for a range of industrial, commercial and infrastructural developments. Experience extends to the assessment of over 150 wind energy developments, 120 solar energy developments and includes numerous Strategic Infrastructure Development (SID) projects.

1.2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The application site is located in County Meath at lands located approximately 4km southwest of the centre of Trim. The development will consist of permission for a Distribution Station on lands to the northwest of the R160 regional road.

The development will consist of the construction of a 110 kV Gas Insulated Substation (GIS) building, transformers enclosed within a transformer bund wall, lightning monopoles and associated electrical equipment surrounded by a palisade fence set within existing field boundaries. It will also include removal of one poleset from the existing Corduff – Mullingar 110 kV Overhead line, two new Line Interface Masts and a site access track to the R160 regional road.

1.3 ASSESSMENT METHODOLOGY

Production of this Landscape and Visual Impact Assessment involved;

- A desktop study to establish an appropriate study area, relevant landscape and visual designations in the Meath County Development Plan as well as other sensitive visual receptors. This stage culminates in the selection of a set of potential viewpoints from which to study the effects of the proposed development;
- Fieldwork to establish the landscape character of the receiving environment and to confirm and refine the set of viewpoints to be used for the visual assessment stage;
- Assessment of the significance of the landscape impact of the proposed development as a function of landscape sensitivity weighed against the magnitude of the landscape impact; and
- Assessment of the significance of the visual impact of the proposed development as a function of visual receptor sensitivity weighed against the magnitude of the visual impact. This aspect of the assessment is supported by photomontages prepared in respect of the selected viewshed reference points (VRP).
- Incorporation of mitigation measures to reduce potential impacts and estimation of residual impacts once mitigation has become established.

1.3.1 Landscape Impact Assessment Criteria

When assessing the potential impacts on the landscape resulting from a proposed development, the following criteria are considered:

- Landscape character, value and sensitivity;
- Magnitude of likely impacts; and
- Significance of landscape effects

The sensitivity of the landscape to change is the degree to which a particular landscape receptor (Landscape Character Area (LCA) or feature) can accommodate changes or new elements without

unacceptable detrimental effects to its essential characteristics. Landscape value and sensitivity are classified using the following criteria set out in **Table 1**.

Table 1 Landscape Value and Sensitivity

Sensitivity	Description
Very High	Areas where the landscape character exhibits a very low capacity for change in the form of development. Examples of which are high value landscapes, protected at an international or national level (World Heritage Site/National Park), where the principal management objectives are likely to be protection of the existing character.
High	Areas where the landscape character exhibits a low capacity for change in the form of development. Examples of which are high value landscapes, protected at a national or regional level (Area of Outstanding Natural Beauty), where the principal management objectives are likely to be considered conservation of the existing character.
Medium	Areas where the landscape character exhibits some capacity and scope for development. Examples of which are landscapes, which have a designation of protection at a county level or at non-designated local level where there is evidence of local value and use.
Low	Areas where the landscape character exhibits a higher capacity for change from development. Typically this would include lower value, non-designated landscapes that may also have some elements or features of recognisable quality, where landscape management objectives include, enhancement, repair and restoration.
Negligible	Areas of landscape character that include derelict, mining, industrial land or are part of the urban fringe where there would be a reasonable capacity to embrace change or the capacity to include the development proposals. Management objectives in such areas could be focused on change, creation of landscape improvements and/or restoration to realise a higher landscape value.

The magnitude of a predicted landscape impact is a product of the scale, extent or degree of change that is likely to be experienced as a result of the proposed development. The magnitude takes into account whether there is a direct physical impact resulting from the loss of landscape components and/or a change that extends beyond the application site boundary that may have an effect on the landscape character of the area. **Table 2** refers.

Table 2 Magnitude of Landscape Impacts

Magnitude of Impact	Description
Very High	Change that would be large in extent and scale with the loss of critically important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality.
High	Change that would be more limited in extent and scale with the loss of important landscape elements and features, that may also involve the introduction of new uncharacteristic elements or features that contribute to an overall change of the landscape in terms of character, value and quality.
Medium	Changes that are modest in extent and scale involving the loss of landscape characteristics or elements that may also involve the introduction of new uncharacteristic elements or features that would lead to changes in landscape character, and quality.
Low	Changes affecting small areas of landscape character and quality, together with the loss of some less characteristic landscape elements or the addition of new features or elements.
Negligible	Changes affecting small or very restricted areas of landscape character. This may include the limited loss of some elements or the addition of some new features or elements that are characteristic of the existing landscape or are hardly perceivable.

The significance of a landscape impact is based on a balance between the sensitivity of the landscape receptor and the magnitude of the impact. The significance of landscape impacts is arrived at using the following matrix set out in **Table 3**.

Table 3 Impact significance matrix

	Sensitivity of Receptor				
Scale/Magnitude	*Very High*	*High*	*Medium*	*Low*	*Negligible*
Very High	Profound	Profound-substantial	Substantial	Moderate	Slight
High	Profound-substantial	Substantial	Substantial-moderate	Moderate-slight	Slight-imperceptible
Medium	Substantial	Substantial-moderate	Moderate	Slight	Imperceptible
Low	Moderate	Moderate-slight	Slight	Slight-imperceptible	Imperceptible
Negligible	Slight	Slight-imperceptible	Imperceptible	Imperceptible	Imperceptible

Note: Judgements deemed 'substantial' and above are considered to be 'significant impacts' in EIA terms.

1.3.2 Visual Impact Assessment Criteria

As with the landscape impact, the visual impact of the proposed development will be assessed as a function of sensitivity versus magnitude. In this instance the sensitivity of the visual receptor, weighed against the magnitude of the visual effect.

1.3.3 Sensitivity of Visual Receptors

Unlike landscape sensitivity, the sensitivity of visual receptors has an anthropocentric basis. It considers factors such as the perceived quality and values associated with the view, the landscape context of the viewer, the likely activity they are engaged in and whether this heightens their awareness of the surrounding landscape. A list of the factors considered by the assessor in estimating the level of sensitivity for a particular visual receptor is outlined below and used in **Table 6** below to establish visual receptor sensitivity at each VRP:

1. **Susceptibility of Receptors** - In accordance with the Institute of Environmental Management and Assessment ("IEMA") Guidelines for Landscape and Visual Assessment (3rd edition 2013) visual receptors most susceptible to changes in views and visual amenity are;
    - "*Residents at home;*
    - *People, whether residents or visitors, who are engaged in outdoor recreation, including use of public rights of way, whose attention or interest is likely to be focussed on the landscape and on particular views;*
    - *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience;*

- *Communities where views contribute to the landscape setting enjoyed by residents in the area; and*
- *Travellers on road rail or other transport routes where such travel involves recognised scenic routes and awareness of views is likely to be heightened*".

Visual receptors that are less susceptible to changes in views and visual amenity include;

- "*People engaged in outdoor sport or recreation, which does not involve or depend upon appreciation of views of the landscape; and*
- *People at their place of work whose attention may be focussed on their work or activity, not their surroundings and where the setting is not important to the quality of working life*".

2. **Recognised scenic value of the view** (County Development Plan designations, guidebooks, touring maps, postcards etc). These represent a consensus in terms of which scenic views and routes within an area are strongly valued by the population because in the case of County Developments Plans, for example, a public consultation process is required;

3. **Views from within highly sensitive landscape areas**. Again, highly sensitive landscape designations are usually part of a county's Landscape Character Assessment, which is then incorporated within the County Development Plan and is therefore subject to the public consultation process. Viewers within such areas are likely to be highly attuned to the landscape around them;

4. **Primary views from dwellings**. A proposed development might be seen from anywhere within a particular residential property with varying degrees of sensitivity. Therefore, this category is reserved for those instances in which the design of dwellings or housing estates, has been influenced by the desire to take in a particular view. This might involve the use of a slope or the specific orientation of a house and/or its internal social rooms and exterior spaces;

5. **Intensity of use, popularity**. This relates to the number of viewers likely to experience a view on a regular basis and whether this is significant at county or regional scale;

6. **Connection with the landscape**. This considers whether or not receptors are likely to be highly attuned to views of the landscape i.e. commuters hurriedly driving on busy national route versus hill walkers directly engaged with the landscape enjoying changing sequential views over it;

7. **Provision of elevated panoramic views**. This relates to the extent of the view on offer and the tendency for receptors to become more attuned to the surrounding landscape at locations that afford broad vistas;

8. **Sense of remoteness and/or tranquillity.** Receptors taking in a remote and tranquil scene, which is likely to be fairly static, are likely to be more receptive to changes in the view than those taking in the view of a busy street scene, for example;

9. **Degree of perceived naturalness**. Where a view is valued for the sense of naturalness of the surrounding landscape it is likely to be highly sensitive to visual intrusion by distinctly manmade features;

10. **Presence of striking or noteworthy features.** A view might be strongly valued because it contains a distinctive and memorable landscape feature such as a promontory headland, lough or castle;

11. **Historical, cultural and / or spiritual significance.** Such attributes may be evident or sensed by receptors at certain viewing locations, which may attract visitors for the purposes of contemplation or reflection heightening the sense of their surroundings;

12. **Rarity or uniqueness of the view**. This might include the noteworthy representativeness of a certain landscape type and considers whether the receptor could take in similar views anywhere in the broader region or the country;

13. **Integrity of the landscape character**. This looks at the condition and intactness of the landscape in view and whether the landscape pattern is a regular one of few strongly related components or an irregular one containing a variety of disparate components;

14. **Sense of place**. This considers whether there is special sense of wholeness and harmony at the viewing location; and

15. **Sense of awe**. This considers whether the view inspires an overwhelming sense of scale or the power of nature.

Those locations deemed to satisfy many of the above criteria will likely be of higher sensitivity. (No relative importance is inferred by the order of listing in **Table 5**.) Overall sensitivity may result from a number of these factors or a strong association with one or two in particular.

1.3.4 Visual Impact Magnitude

The magnitude of visual effects is determined by two factors: the proposal's visual presence (relative visual dominance) and its effect on visual amenity. The magnitude of visual impacts is classified in **Table 4**.

Table 4 Magnitude of Visual Impact

Criteria	Description
Very High	The proposal intrudes into a large proportion or critical part of the available vista and is without question the most noticeable element. A high degree of visual clutter or disharmony is also generated, strongly reducing the visual amenity of the scene.
High	The proposal intrudes into a significant proportion or important part of the available vista and is one of the most noticeable elements. A considerable degree of visual clutter or disharmony is also likely to be generated, appreciably reducing the visual amenity of the scene.
Medium	The proposal represents a moderate intrusion into the available vista, is a readily noticeable element and/or it may generate a degree of visual clutter or disharmony, thereby reducing the visual amenity of the scene. Alternatively, it may represent a balance of higher and lower order estimates in relation to visual presence and visual amenity.
Low	The proposal intrudes to a minor extent into the available vista and may not be noticed by a casual observer and/or the proposal would not have a marked effect on the visual amenity of the scene.
Negligible	The proposal would be barely discernible within the available vista and/or it would not detract from, and may even enhance, the visual amenity of the scene.

1.3.5 Visual Impact Significance

As stated above, the significance of visual impacts is a function of visual receptor sensitivity and the visual impact magnitude. This relationship is expressed in the same significance matrix and applies the same EPA definitions of significance as used earlier regarding landscape impacts (**Table 3** refers).

1.3.6 Quality and Timescale of Effects

EPA Guidance for EIAs recommends assessing the significance of landscape and visual effects and determining their quality. This could be negative/adverse, neutral, or positive/beneficial. Landscape and Visual effects are also categorised according to their duration:

- Temporary – Lasting for one year or less;
- Short Term – Lasting one to seven years;
- Medium Term – Lasting seven to fifteen years;
- Long Term – Lasting fifteen years to sixty years; and
- Permanent – Lasting over sixty years.

1.4 EXTENT OF STUDY AREA

From similar studies it is anticipated that the proposed development is likely to be difficult to discern beyond approximately 1km and is not likely to give rise to significant landscape or visual impacts beyond approximately 2km. In the interests of a comprehensive appraisal, a 3km radius study area was selected in this instance (**Figure 1** refers).

Figure 1: Study area map

1.5 LANDSCAPE AND VISUAL POLICY CONTEXT AND DESIGNATIONS

1.5.1 Meath County Development Plan 2021-2027

A landscape character assessment was carried out in 2007 and has been included within Appendix A.05 Landscape Character Assessment[1] of the current Meath County Development Plan 2021-2027[2], in which the county is divided into four main landscape character types. These are subdivided into 20 geographically distinct Landscape Character Areas (LCAs). The proposed development is located within a '*Lowland Area*' Landscape Character Type (Type 2) (**Figure 2** refers). However, in terms of more-localised scale LCAs, the site is situated within '*LCA 6 – Central lowlands*'. LCA 6 is identified as having; '*High*' Landscape Value; '*Moderate*' Landscape Sensitivity (**Figure 2** and **Figure 3** refer), and; '*Regional*' Landscape Importance. Map 4 of the Landscape Character Assessment (**Figure 4** refers) indicates potential capacity for various development types. LCA 6, in which the site is located, has been identified as having a 'high' capacity for 'visitor facilities', a 'low-medium' capacity for wind turbines and a 'medium' capacity for all types of development. These classifications provide the sense of reasonable robustness for this LCA to accommodate various forms of development, including alterations to existing industrial and extractive facilities.

The landscape description for this Landscape Character Type includes:

> *'The Lowland LCT covers the largest proportion of Meath and, due to the high quality of the land, is primarily agricultural. In the south of the County there is an abundance of 18th Century demesnes with extensive areas of mixed woodland and parkland bounded by original stonewalls, creating an attractive landscape setting for the numerous estate houses. The Lowland LCT have been developed more extensively than other LCT's…'*

There are eight general recommendations for this Landscape Character Type, but none relate to the proposed development.

The landscape description for this Landscape Character Area includes:

> *'Large lowland landscape area composed of rolling drumlins interspersed with numerous large estates and associated parkland. Thick wooded hedgerows, with some conifer plantations, and shelterbelts of ash and larch, separate medium to large fields. Deep roadside drainage ditches and banked hedgerows are a common feature of the landscape in the enclosed rural road corridors. The main transport routes are those radiating from Trim…'*

[1] https://consult.meath.ie/en/consultation/meath-adopted-county-development-plan/chapter/a05-landscape-character-assessment
[2] https://consult.meath.ie/en/consultation/meath-adopted-county-development-plan

There are seven general recommendations for this Landscape Character Area. In terms of relevant recommendations, the Co. Meath landscape character assessment states that:

- *"This LCA is in good condition so the existing methods of managing the rural landscape should be maintained.*
- *Future expansion of settlements should take place in accordance with design guidelines to inform layout, scale, detailing, use of materials and location. Also to ensure that the existing strong interfaces between urban and rural areas are maintained.*
- *Maintain the visual quality of the landscape by avoiding development that would adversely affect short range views between drumlins."*

Four general objectives are provided concerning landscape in 'Section 8.17 Landscape[3]' of the Meath County Development Plan 2021-2027, but none are directly relevant to the proposed development:

- *HER OBJ 48 - To support the aims and objectives of the European Landscape Convention by implementing the relevant objectives and actions of the National Landscape Strategy 2015-2025 and any revisions thereof.*
- *HER OBJ 49 - To ensure that the management of development will have regard to the value of the landscape, its character, importance, sensitivity and capacity to absorb change as outlined in Appendix 5 Meath Landscape Character Assessment and its recommendations.*
- *HER OBJ 50 - To require landscape and visual impact assessments prepared by suitably qualified professionals be submitted with planning applications for development which may have significant impact on landscape character areas of medium or high sensitivity.*
- *HER OBJ 51 - To review and update (if required), in the context of a regional approach to landscape assessment, the County Landscape Character Assessment following publication of statutory guidelines for Planning Authorities on local Landscape Character Assessments, as outlined in the National Landscape Strategy 2015-2025.*

Furthermore, there are two policies relating to landscape, one of which relates to the management of existing hedgerows, which is of particular relevance to this proposed development as it has been designed to avoid impacting existing hedgerows:

- *HER POL 52 - To protect and enhance the quality, character, and distinctiveness of the landscapes of the County in accordance with national policy and guidelines and the recommendations of the Meath Landscape Character Assessment (2007) in Appendix 5, to ensure that new development meets high standards of siting and design.*
- *HER POL 53 - To discourage proposals necessitating the removal of extensive amount of trees, hedgerows and historic walls or other distinctive boundary treatments.*

[3] https://consult.meath.ie/en/consultation/meath-adopted-county-development-plan/chapter/08-cultural-and-natural-heritage-strategy

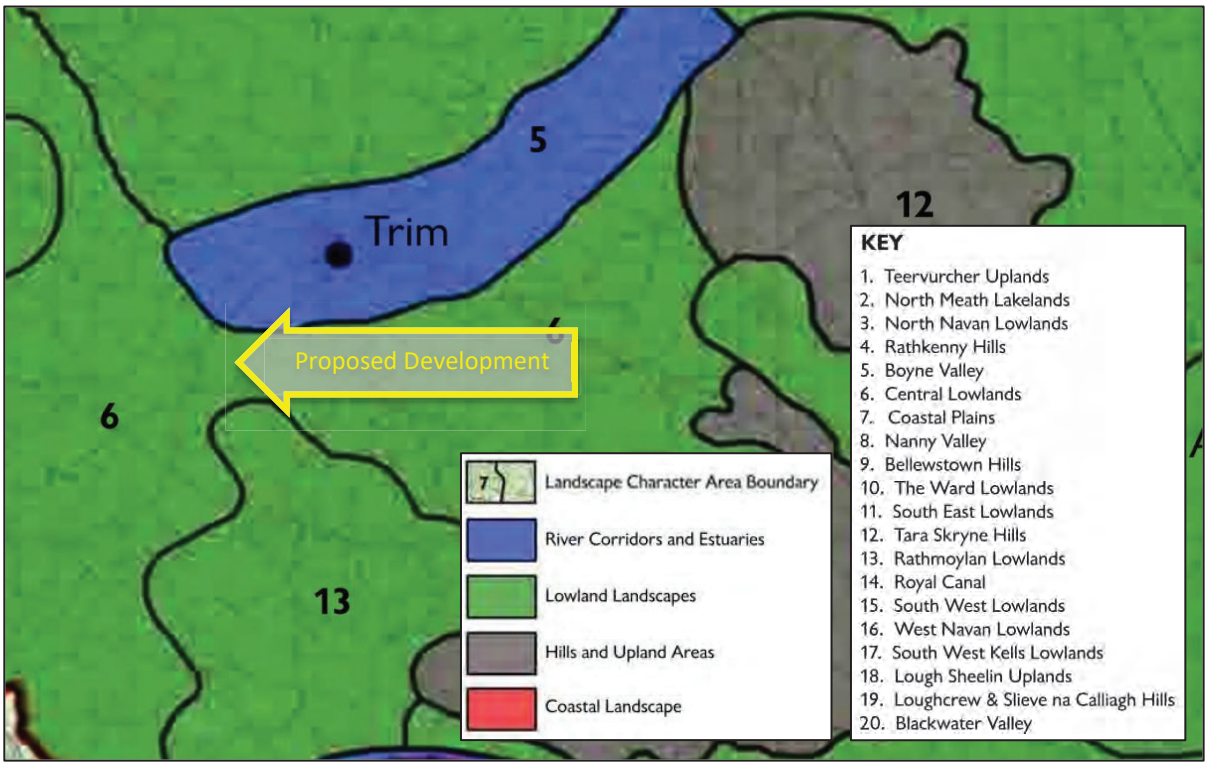

Figure 2: Excerpt from Meath Landscape Character Assessment, map 1.0 showing the approximate location of proposed development in relation to designated landscape character types and landscape character areas.

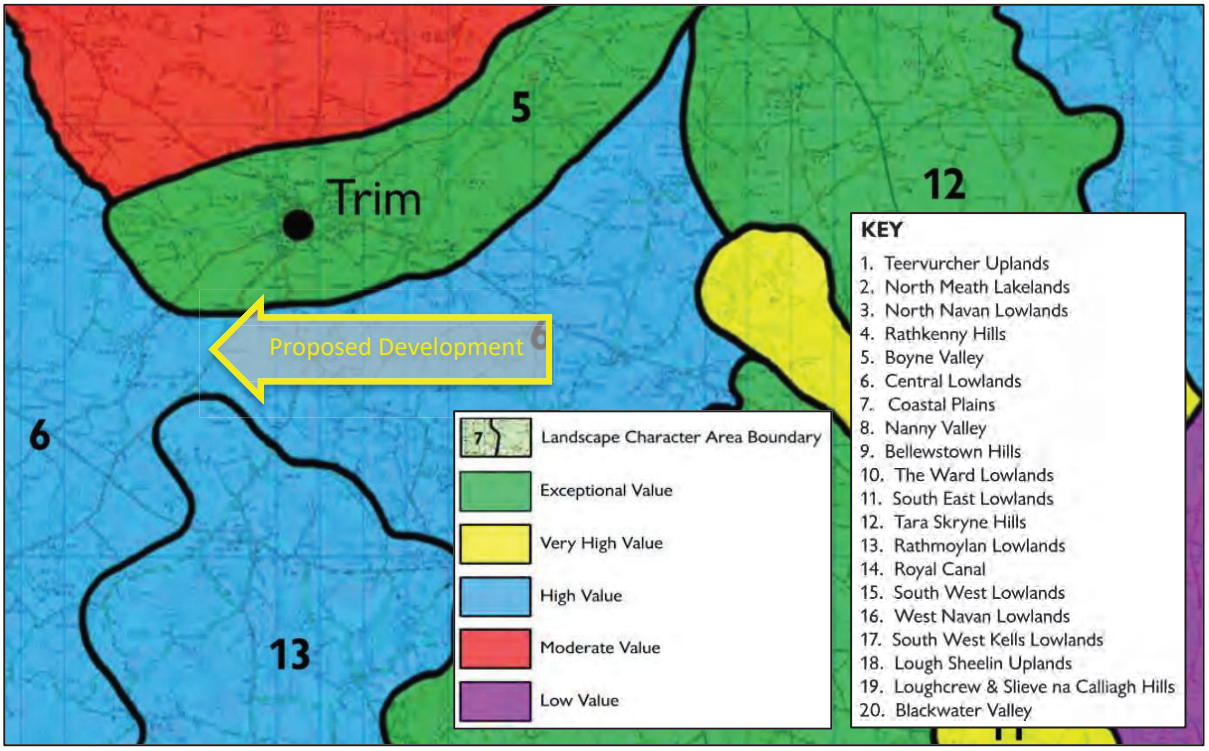

Figure 3: Excerpt from Meath Landscape Character Assessment, map 2.0 showing the approximate location of the proposed development in relation to landscape character areas and associated Value ratings.

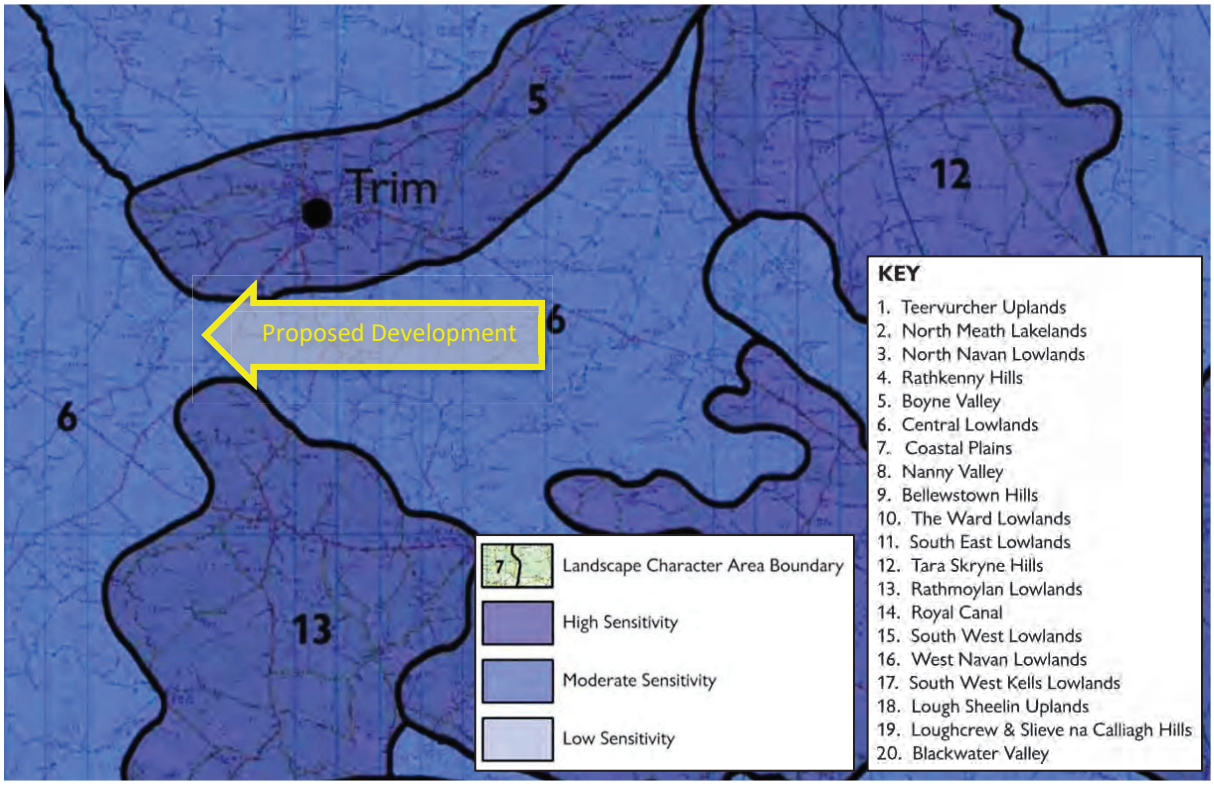

Figure 4: Excerpt from Meath Landscape Character Assessment, map 3.0 showing the approximate location of the proposed development in relation to areas of sensitivity.

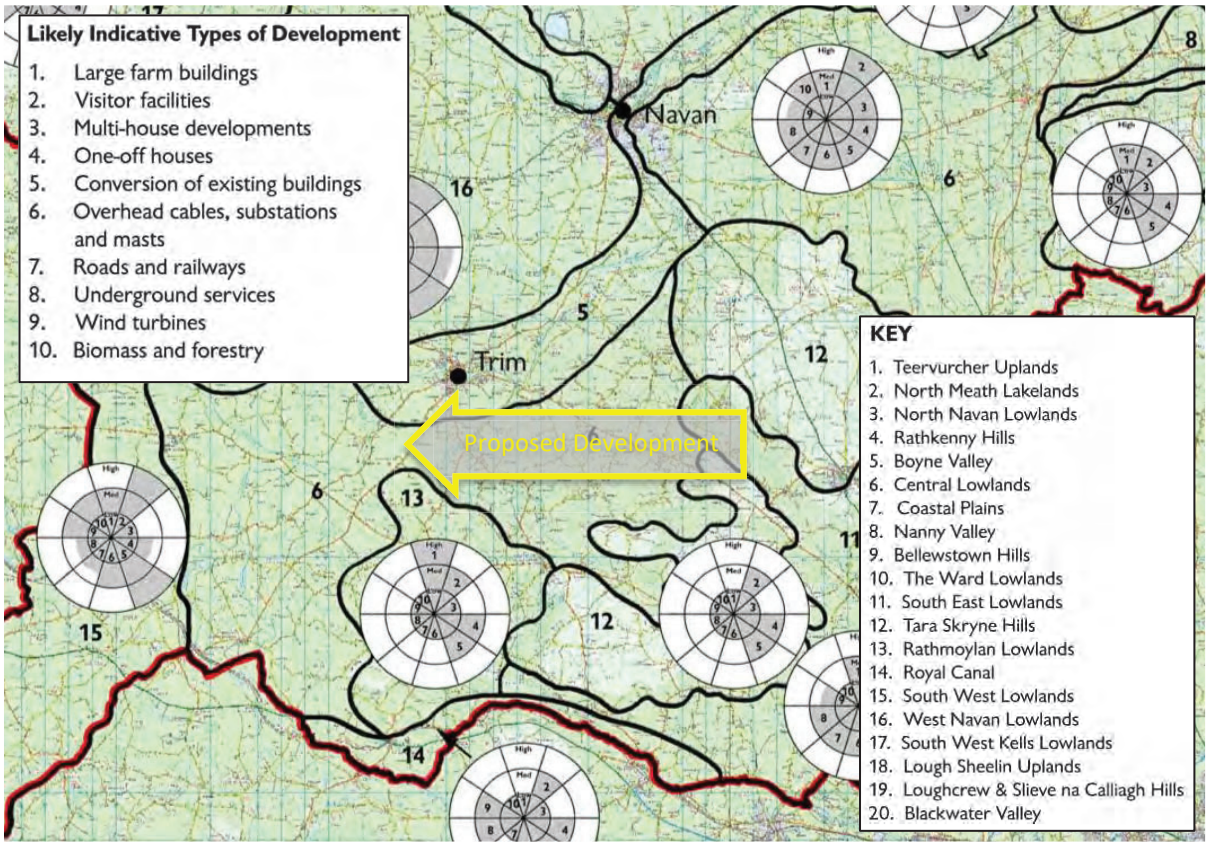

Figure 5: Excerpt from Meath Landscape Character Assessment, map 4.0 showing the potential capacity for development within certain landscape character areas.

1.5.2 Views of Recognised Scenic Value

Views of recognised scenic value are primarily indicated within the current and draft Development Plans in the context of scenic views/route designations, but they might also be indicated on touring maps, guidebooks, roadside rest stops, or postcards that represent the area.

1.5.2.1 County Meath

Designated scenic Views and Prospects within County Meath are listed in Appendix 10, in Volume 2 and on Map 8.6 of the Meath County Development Plan. There are two designated scenic viewpoints within the study area (**Figure 6** refers).

The two designated scenic viewpoints in the study area are View ID no. 78 and View ID no. 51. View ID no. 51 is described in the Meath CDP as: '*R158 between Trim and Laracor*' and the direction of view is to the north, but because this view is not orientated towards the proposed development, it will not have any potential to be impacted. View ID no. 78 is described in the Meath CDP as: '*Boyne Valley from Derrindaly Bridge*', and the direction of view is to the north and south but the proposed development is situated to the east. (This designated scenic viewpoint has been selected as a viewshed reference point, VP1 – see Section 4.)

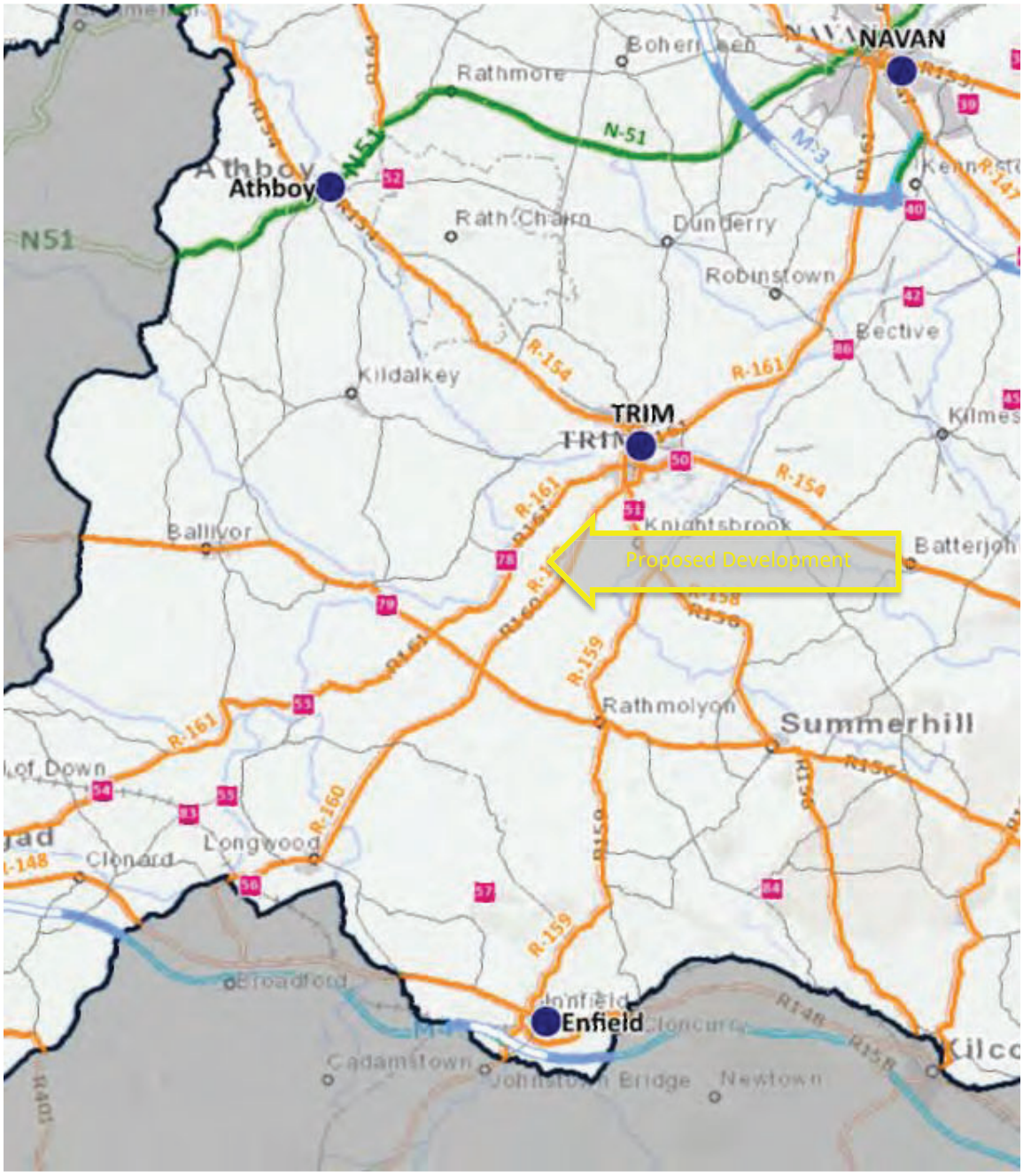

Figure 6: Excerpt from Meath Landscape Character Assessment, map 8.6 showing designated Views and Prospects.

2 EXISTING ENVIRONMENT

2.1 LANDSCAPE BASELINE

The landscape baseline represents the existing landscape context and is the scenario against which any changes to the landscape brought about by the proposed development will be assessed.

A description of the landscape context of the proposed development and wider study area is provided below under the headings of landform and drainage, vegetation and land use, centres of population and houses, transport routes and public amenities and facilities and the site context. Although this description forms part of the landscape baseline, many of the landscape elements identified also relate to visual receptors, i.e. places and transport routes from which viewers may potentially see the proposed development. The visual resource will be described in greater detail in **Section 2.2**.

2.1.1 Landform and Drainage

In the overall study area context, this is a gently undulating lowland landscape. The River Boyne runs through the study area, first from west to north, before veering in an easterly direction to pass through the settlement of Trim, just beyond the study area. The Knightsbrook River forms another valley to the southeast of the site. It follows a generally northerly course, passing approximately 1.7km to the southeast before converging with the River Boyne further to the northeast.

2.1.2 Vegetation and Land Use

This is a hinterland landscape with a varied mix of land uses (**Figure 7** refers). The predominant land use is pastoral farmland, comprising small to medium-sized geometric fields defined by a complex network of dense, mature tree-lined hedgerows. The settlement of Trim accounts for the principal urban land cover, which includes some significant built-up areas. There is a quarry at Trammon in the southern extent of the study area.

2.1.3 Centres of Population and Houses

The most significant population centre within the study area is Trim, located approximately 2.7km northeast of the site. No other notable population centres exist, but a substantial, dispersed rural population exists within the study area. These tend to be in the form of linear clusters of dwellings along local and regional roads. One such group of dwellings is situated along the R160 regional road a short distance to the south of the site (approximately 190m). These are the nearest residents.

2.1.4 Transport Routes

A handful of regional roads are located within the bounds of the study area, the nearest of which is the R160, which passes to the south of the site and is oriented in a southwest-northeast direction. The R161 diverges from the R160 just south of Trim, heading in a southerly direction approximately 1.5km

to the north of the site. Also running parallel to the R160, the R159 makes its way through the southwestern extents of the study area.

2.1.5 Tourism, Heritage and Recreational Amenities

The study area's most important tourism and heritage feature is the River Boyne, which is also well known among anglers for its salmon fishing. Two golf courses are also located within the study area, including the extensive recreational areas encompassed by the County Meath Golf Club and the South Meath Golf Club golf courses, which are located adjacent to the southwest and northeast of the site. Otherwise, recreational opportunities are limited to sports grounds near Trim and walking or cycling on the public road network.

2.1.6 Conservation Interests

Boyne River is a Special Area Conservation SAC and a proposed Natural Heritage Area (pNHA). No other ecological designations were identified.

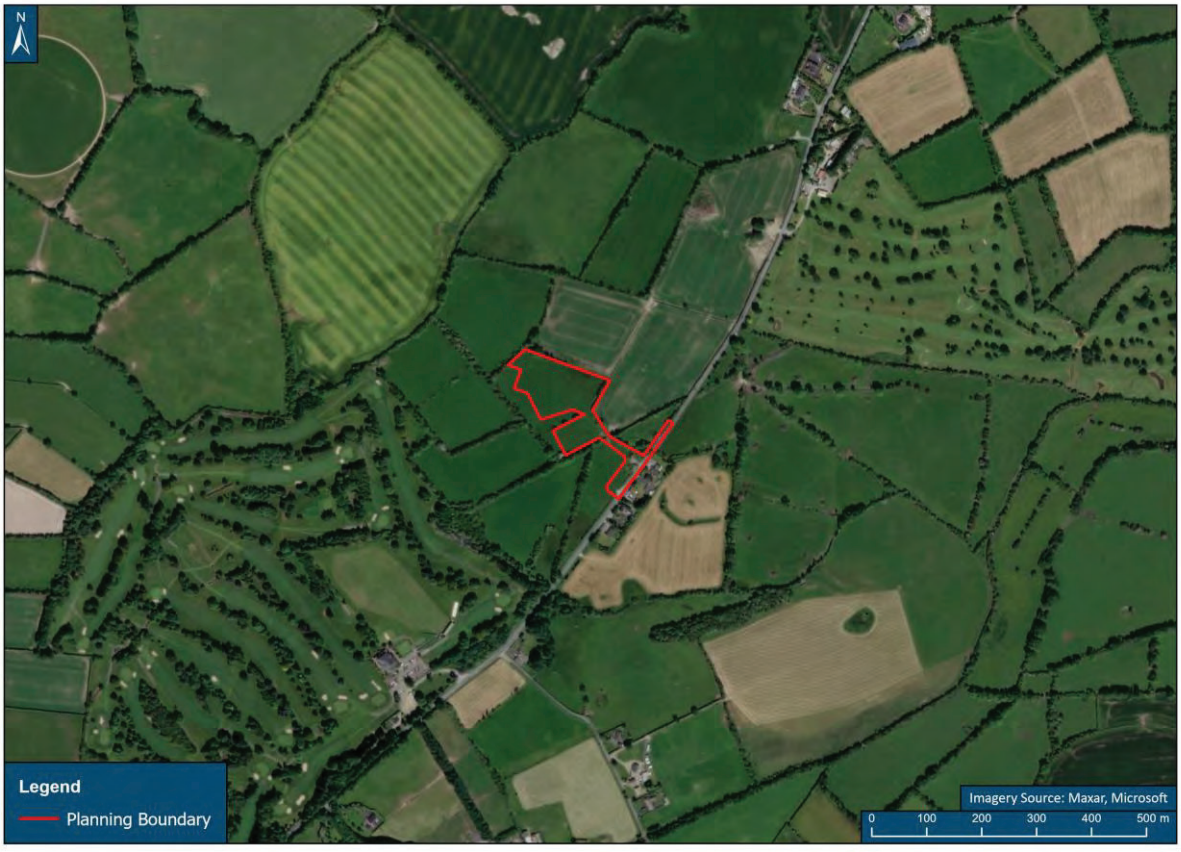

Figure 7: Aerial view showing the application site boundary (red line) and the immediate landscape context (Google Earth Pro).

2.2 VISUAL BASELINE

Only those parts of the receiving environment that potentially afford views of the proposed development are of concern to this section of the assessment. A computer-generated Zone of Theoretical Visibility (ZTV) map has been prepared to illustrate where the proposed development is potentially visible. The ZTV map is based solely on terrain data (bare ground visibility) and ignores features such as trees, hedges or buildings, which may screen views. Given the complex vegetation patterns within this landscape, the main value of this form of ZTV mapping is to determine those parts of the landscape from which the proposed development will not be visible due to terrain screening within the 3km study area. It allows further focused investigation of the areas from which the proposed development may potentially be visible and determines the actual extent of visibility which is available in reality. It is the proposed PV panel array only that is the subject of this ZTV analysis.

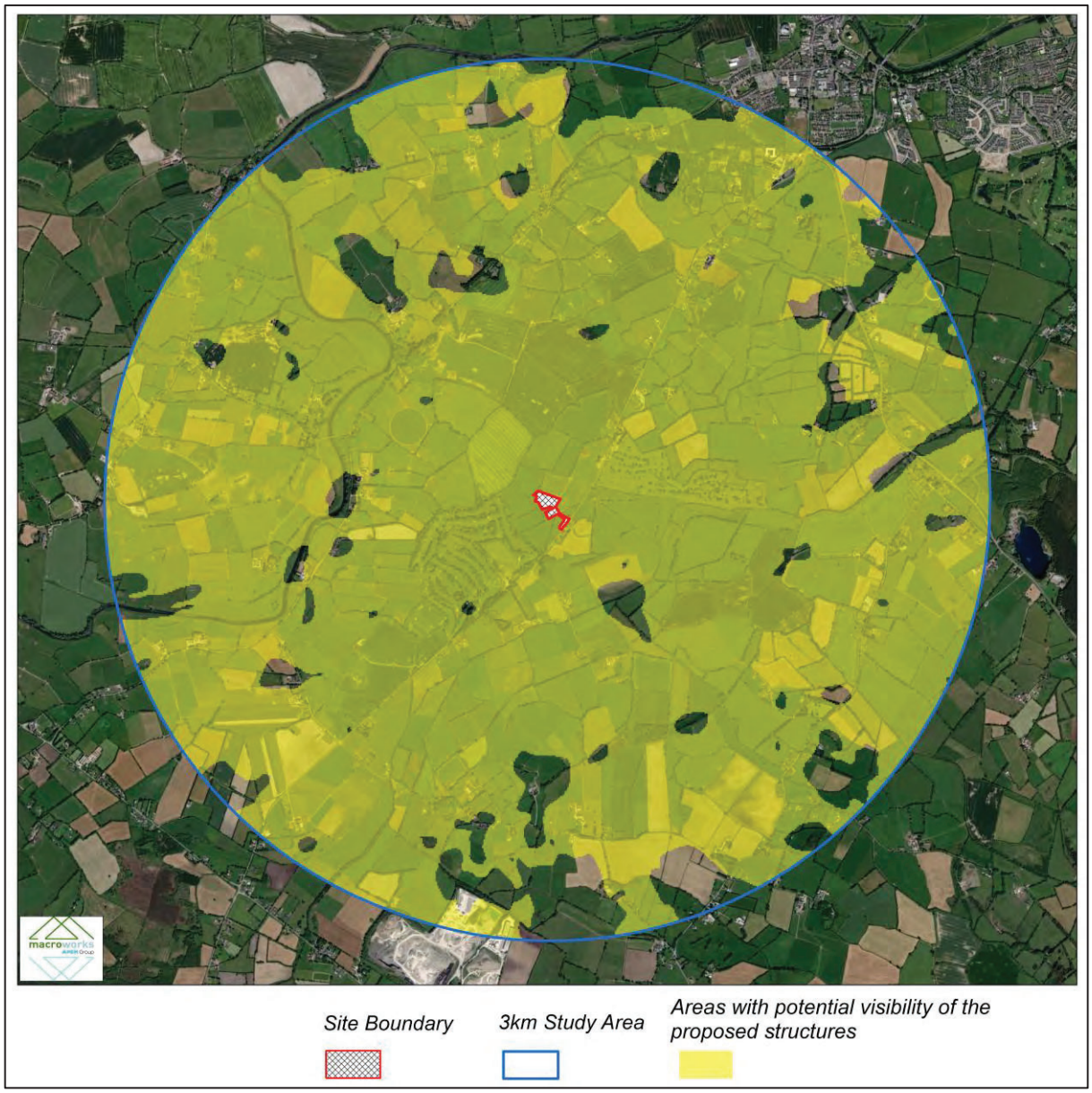

Figure 8: Standard (bare-ground) ZTV map (excluding all existing vegetation and man-made features).

The proposed towers will be the highest structure of the development, at 16.25 m above the underlying terrain. The most important point regarding this 'bare-ground' ZTV map is that it is theoretical.

The following key points are illustrated by the 'bare-ground' ZTV map (see **Figure 8** above):

- The low-lying terrain within the application site and study area means there is theoretical potential for views of the proposed development from many areas within the study area, which is indicated by the yellow-coloured ZTV pattern that occurs throughout the study area.

- There is no potential for visibility of the proposed development from the locations where the yellow-coloured ZTV pattern is absent. Such low lying hollows are dotted sporadically across the study area.

3 MITIGATION AND RESTORATION MEASURES

In this instance, the main mitigation measure employed is 'mitigation by avoidance'. The siting of the proposed Fosterstown Distribution Station is in a robust and well-contained rural area that also avails of both terrain and hedgerow screening such that the scheme will not be prominent within the surrounding landscape. Retention of existing hedgerow boundaries within and around the site also prevents a sense of ambivalence, aids visual screening, and maintains the existing field pattern. In this respect, the proposed Fosterstown Distribution Station is not perceived to impose itself on the existing landscape pattern.

In addition to retaining the existing hedgerows around the site, it is also proposed to bolster existing perimeter hedgerows with under-planting and inter-planting of whip transplants to ensure dense and consistent site screening in perpetuity (**Figure 9** refers). Whip species will be selected to complement the existing broadleaf hedgerow species mix around the site and will be of local provenance. A new hedgerow is proposed outside the palisade security fence that encloses the main substation. This planting will be allowed to mature up to a maintained height of 3-4m to further enhance and aid in screening the proposed development when viewed from nearby dwellings and roads. Some native trees are proposed across the site and a grassland/meadow management protocol is proposed in the undeveloped portions of the site. The mitigation measures are indicated on the Landscape Mitigation Plan (Appendix H).

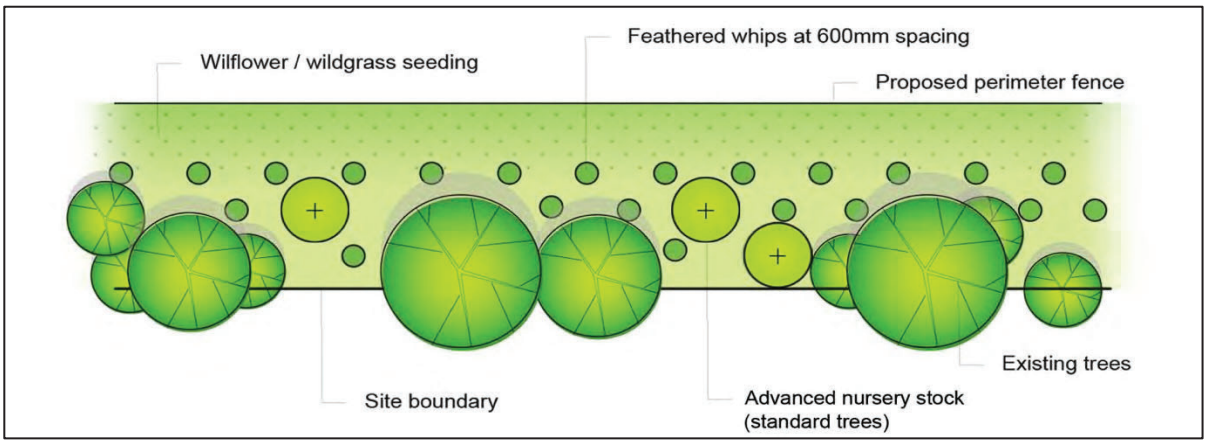

Figure 9: Indicative boundary planting detail showing the approach to inter-planting and under-plating of existing hedgerows TYPE 1 (where indicated).

A native hedgerow will be planted ('Type 2,' as per below) to enclose the main substation.

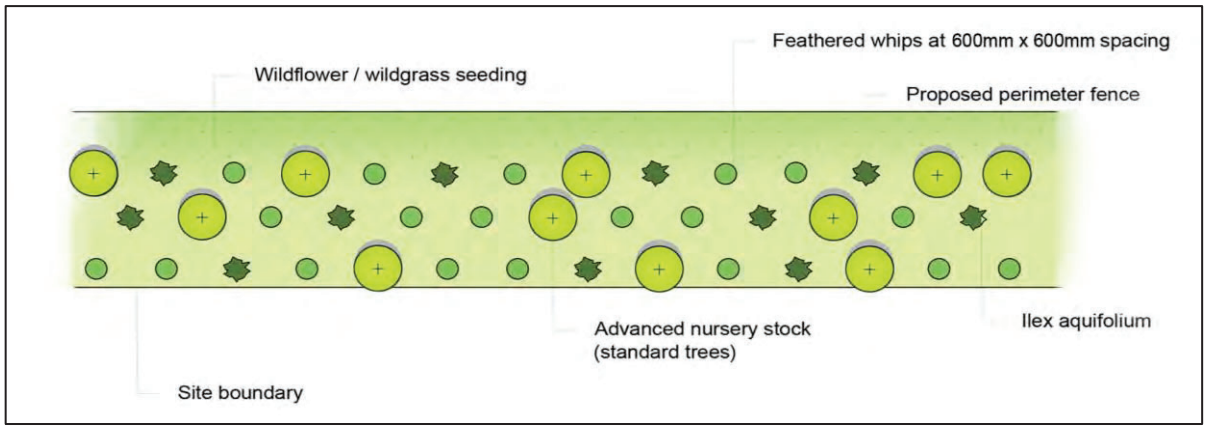

Figure 10: Indicative boundary planting ('Type 2' in the Landscape Mitigation Plans) showing the approach for new sections of hedgerow.

4 IDENTIFICATION OF VIEWSHED REFERENCE POINTS AS A BASIS FOR ASSESSMENT

Viewshed Reference Points (VRP's) are the locations used to study the visual impacts of a proposal in detail. It is not warranted to include each and every location that provides a view of development as this would result in an unwieldy report and make it extremely difficult to draw out the key impacts arising from the proposed development. Instead, the selected viewpoints are intended to reflect various receptor types, distances and angles. The visual impact of a proposed development is assessed by Macro Works using up to six categories of receptor type as listed below:

- Key Views (from features of national or international importance);
- Designated Scenic Routes and Views;
- Local Community views;
- Centres of Population;
- Major Routes; and
- Amenity and heritage features.

VRP's might be relevant to more than one category and this makes them even more valid for inclusion in the assessment. The receptors intended to be represented by a particular VRP are listed at the beginning of each viewpoint appraisal.

The Viewshed Reference Points selected in this instance are set out in the **Table 5** and **Figure 11** below.

Table 5 Outline Description of Selected Viewshed Reference Points (VRPs)

VRP No.	*Location*	*Direction of View*
VP1	Local road, Derryinydaly	SE
VP2	R161 regional road, Newtownmoynagh	SE
VP3	R160 regional road, Kennastown	SW
VP4	R160 regional road, Carberrystown	NE

Figure 11: Viewpoint location map.

5 IMPACT ASSESSMENT

5.1 LANDSCAPE IMPACT

5.1.1 Landscape Value and Sensitivity

Landscape value and sensitivity are considered with the several factors highlighted in the Guidelines for Landscape and Visual Impact Assessment 2013, which are set out below and discussed relative to the application site and study area.

This area of gently undulating terrain between the Boyne and Knightsbrook River valleys. Whilst the landscape character of the site and its immediate environs is predominantly rural, in the broader context, this is a hinterland landscape consisting of various land uses and supporting a reasonably dense rural population. The southern outskirts of Trim consist of industrial and residential estates and golf courses, with major routes that converge on the settlement. Whilst the golf courses and urban fringe housing developments borrow rural amenity from the neighbouring landscape context, this is principally a working landscape, where values are generally associated with rural productivity and subsistence of the farming lifestyle.

The settlement of Trim and its immediate environs have a strong sense of heritage, with the Boyne Valley and Trim Castle adding to the sense of place and association with other heritage assets within this iconic river corridor. However, it is important to note that the proposed development site lies outside the Boyne River valley. It occurs in an area categorised as LCA 6 ‘Central lowlands’ in the Landscape Character Assessment of County Meath. LCA 6 has been given a ‘moderate’ landscape sensitivity in the Landscape Character Assessment.

Based on the reasons outlined above, the study area encompasses a robust landscape context that is already influenced by the settlement of Trim. The Landscape Character Assessment of County Meath identifies LCA 6 as being of ‘regional’ landscape importance but the receiving landscape of the proposed development is not considered highly rare or distinctive on a local, regional, or national level.

Whilst it is acknowledged that the Boyne River Valley has a greater level of sensitivity, the site’s landscape context is considered to be that of a more typical rural hinterland. Therefore, on the balance of these factors and following the criteria outlined in Table 1.1, the landscape sensitivity is deemed to be **Medium**.

5.1.2 Magnitude of Landscape Effects

Site activity will be much higher during the proposed development's construction and decommissioning phases than during the operational phase. Both are assessed.

5.1.2.1 Construction Stage

Access to the site will be via the R160 regional road, requiring the removal of up to 50 meters of roadside vegetation on the north side of the road to facilitate the full extent of the proposed site entrance and its associated sightlines. Trenches will be excavated to install conductors below ground from the R160 to the main substation. The physical impact of the trench on the landscape will be modest. Impacts on land cover for this off-road portion of underground cable will be limited to a narrow swathe where some grassland and hedgerow vegetation must be removed. These impacts will not materially affect the study area's landscape fabric or character. While construction activity may temporarily alter the landscape character locally, these changes will be transitory. Open-cut trenching will remove localised vegetation, but the route has been selected to keep this to a necessary minimum and healthy mature trees will be preserved wherever possible. Trenches will be backfilled and will form the route of the site access track, resulting in a permanent but localised change.

During the Construction Phase, physical landscape impacts will occur at the site of the proposed 110kV Substation. These impacts will result from the disturbance of landform and land cover due to the erection of various structures, buildings, and access roads. The construction activities at the main substation will commence with temporary site perimeter fencing. Subsoil excavation will be necessary for the foundations of buildings within the proposed substation site. Given that this is a gently undulating site, significant modification or redistribution of subsoil material is not anticipated to accommodate access road gradients or building ground levels. The earthworks have been designed to balance excavated materials, optimising the use of topsoil and minimising the physical impact.

In addition to the permanent physical disturbance, there will be temporary effects on the landscape character of the site and its immediate surroundings during construction. This will be due to the intensity of construction activities, including the movement of heavy vehicles. A temporary construction compound will house site welfare facilities, vehicle parking, and storage areas for excavated earth and building materials. Tower cranes and partially completed structures will be more visible than surface-level construction activities and characteristic of this phase. These activities represent a notable increase in baseline activity levels for this rural site.

The construction activities will be relatively modest in scale and 'temporary' in duration. While there will be a noticeable increase in activity from workers and construction machinery, few visual receptors will be located near the works. Nevertheless, the construction phase may temporarily impact landscape character due to heavy machinery movement, excavation and stockpiling of soil, and the temporary storage of construction materials.

Based on the above reasons, the magnitude of construction stage landscape effects is deemed **Medium** within the site's immediate surrounds. However, this quickly reduces to Low and Negligible in the study area's wider surroundings where construction activity's visibility is likely to be very limited.

5.1.3 Significance of Construction Phase Landscape Effect

With a Medium magnitude of impact combined with the Medium landscape sensitivity judgement outlined above, the significance of construction stage impacts is deemed to be **Moderate** within the site's immediate surroundings (refer to Table 3). However, this quickly reduces to Moderate-slight and Imperceptible within the wider study area, where construction activities will not be discernible. The quality of the construction stage effects will be **Negative**.

The construction phase is likely to take less than 52 weeks to complete. Construction-related effects are brief in nature and will only result in '**Temporary**' landscape and visual impacts.

5.1.3.1 Operational Stage

There will be permanent physical changes to the land cover within the site, which will not be easily reversible. These changes relate to the excavation required for the foundations of the proposed 110kV substation compound. The proposed towers will reach a maximum height of approximately 19.25 meters, and the proposed 110 kV GIS will be 12 meters high. The development will result in the loss of productive agricultural farmland, replaced by electrical infrastructure.

Due to its relative height and bulk compared to other surface-level features within the site, the proposed 110kV substation compound has the potential to impact the landscape character. The primary effect will be an increased sense of industrialisation within the predominantly rural setting. The development involves adding electrical infrastructure and a new and unfamiliar land use. Once fully constructed, the development will notably increase the intensity of electrical infrastructure in the immediate surroundings. Still, given the context of the receiving landscape, it will not appear inappropriate or incongruous. From a landscape character perspective, the proposed 110kV Substation compound will increase the degree of industrialisation within the landscape but only to a limited extent. It will not significantly alter the wider landscape setting, which is already marked by various productive land uses and infrastructure.

The proposed underground cable will occur within the proposed site access track to minimise physical impacts on the landscape. Because it will not materially rise above the existing terrain, it will not have the potential to result in any notable adverse impacts on the physical landscape or landscape character within the receiving landscape. The new section of the internal site access track above the underground cable will resemble other farm tracks commonly found in this rural area. These features will not result in any material impact on the landscape.

Based on the factors discussed above, the operational phase magnitude of landscape impact is considered **Medium-low** within the immediate vicinity of the site (being those lands contained within approximately 1km). Thereafter, the magnitude of landscape impact is deemed to reduce as it becomes a progressively smaller component of the overall landscape fabric. It is considered that the impact will be **Negative**.

5.1.4 Significance of Operational Phase Landscape Effect

With reference to the significance graph (**Table 3** refers) above, the Medium landscape sensitivity judgement attributed to the study area, coupled with a Medium-low magnitude of operational stage landscape impact, is considered to result in an overall significance of no greater than **Moderate-slight**. Operational-related effects will result in '**Permanent**' landscape and visual impacts.

5.2 VISUAL IMPACT ASSESSMENT

5.2.1 Sensitivity of Visual Receptors

Views of the agricultural landscape are generally pleasant because of its 'green', settled working character. The network of hedgerows and vegetation throughout it contributes to a sense of naturalness. Combined with its gently undulating topography, it generates a high degree of containment in many locations.

However, while the agricultural context forms the primary landscape and visual experience, the site's local landscape is interrupted by existing electrical infrastructure traversing the landscape. Indeed, all parts of this landscape, including those areas in agricultural use, demonstrate longstanding human intervention in the landscape.

VP1 and VP2 are located in the Boyne Valley, and VP1 is located at a designated scenic viewpoint associated with the Derrinydaly Bridge over the River Boyne. The Boyne Valley is a sensitive landscape area, and the scenic designation recognises the scenic quality in that portion of the western extents of the study area. Otherwise, the integrity and quality of landscape features are not considered to contribute to or generate any specific scenic value in most of the study area. Consequently, other views towards the site are not considered unique or form a core part of any key views.

Key differentials in terms of visual receptor sensitivity relate to the occupation of the visual receptor and the distance at which views are obtained. Static residential receptors are generally more susceptible to changes in views than those where views are experienced transiently by those travelling through the landscape. Likewise, receptors located in closer proximity to the site are considered more susceptible to changes in views than those where views are experienced at a distance.

In the context of this site, visual receptors are generally considered to be Medium-low sensitivity (e.g. VP3 and VP4), but this increases to Medium and High-medium upon approach to the River Boyne from the site (VP2 and VP1, respectively).

Table 6 shows the sensitivity at each of the selected viewshed reference points using the criteria set out in Section 1.3.3.

5.2.2 Magnitude of Visual Effects

Photomontages of the proposed development aid the assessment of visual impacts at each of the selected viewpoints. Photomontages are a 'photo-real' depiction of the scheme within the view utilising a rendered three-dimensional model of the development, which has been geo-referenced to allow accurate placement and scale. For each viewpoint, the following images have been produced;

1. Existing view;
2. Outline view (yellow outline showing the extent of the above-ground elements of the proposed development overlaid on the photography);
3. Montage view; and
4. Mitigated view (where visible).

Table 6 Visual Impact Assessment

VRP No.	Title and description of existing view	Receptor Sensitivity	Description and Magnitude of Visual impact	Pre-mitigation Significance/ Quality/ Duration of Visual Impact	Residual Significance/ Quality/ Duration of Visual Impact
VP1	**Local road, Derryinydaly** This VRP is representative of View ID no. 78, as identified in the Meath CDP. It is a local road bounded by low drystone walls that merge into the parapet of the Derrindaly Bridge, which spans the Boyne River in the middle ground. The view to the west is foreshortened by mature intervening vegetation.	**High-medium**	The proposed development will be fully screened by existing vegetation and landform from this location, consequently the magnitude of impact is deemed **Negligible**.	**Imperceptible/ Neutral/ Long term**	**Imperceptible/ Neutral/ Long term**
VP2	**R161 regional road, Newtownmoynagh** This is an enclosed view from a field gate onto a regional road within the sensitive Boyne Valley Landscape Character Area. It represents a fleeting glimpse to the west for road users along an otherwise well-screened section of the road. A	**Medium**	The proposed development will be fully screened by existing vegetation and landform from this location, consequently the magnitude of impact is deemed **Negligible**.	**Imperceptible/ Neutral/ Long term**	**Imperceptible/ Neutral/ Long term**

	mature treeline forms a skyline in the middle distance.				
VP3	**R160 regional road, Kennastown** This is a broad view from a regional road to the northeast of the proposed development. This VRP represents a small cluster of residential properties. There is a degree of complexity to the view. In the foreground, the road pavement is adjoined by a residential property. A low-trimmed hedgerow lines the opposite side of the road.	**Medium-low**	The proposed development will be fully screened by existing vegetation and landform from this location, consequently the magnitude of impact is deemed **Negligible**.	**Imperceptible/ Neutral/ Long term**	**Imperceptible/ Neutral/ Long term**
VP4	**R160 regional road, Carberrystown** This is a point on a regional road southeast of the application site where a layby, concrete post, and rail fence have replaced roadside hedgerows. This viewshed reference point represents several residential properties to the southeast of the regional road. A small pasture is enclosed by a mature hedgerow in the middle ground, which foreshortens the view to the northwest.	**Medium-low**	Access to the proposed development will be via the layby at this location. The main substation is located approximately 180m to the northwest. The upper portions of one of the proposed towers, the proposed 110 kV GIS, and a proposed lightning monopole will be visible above and beyond the mature hedgerow in the middle ground. The existing vegetation would screen the remainder of the proposed development.	**Slight/ Negative/ Long term**	**Slight/ Negative/ Long term**

			The scale of the structures is masked by the screening provided by the existing vegetation, and the material used has muted tones; thus, the development is deemed to have a sub-dominant visual presence. There is a degree of contextual ambiguity here concerning the actual context of the main substation relative to the foreground setting, but the new access road and the existing pole sets and overhead conductors will provide a visual link, thus helping the proposed development to integrate with the other elements within the view. However, there will be a visual change that will detract from the visual amenity; consequently, the magnitude of impact is deemed **Low**.		

6 CONCLUSION

Regarding landscape impacts, the proposed development is considered to have a relatively modest physical impact on the site as the substation is contained within the existing hedgerow network, and the proposed development will result in only very minor areas of permanent hedgerow removal to facilitate the site access road and the underground cable. Concerning landscape character, even though the proposed development will appear marginally incongruous in this landscape context, the proposed development is thematically linked to the existing development trends within the hinterland landscape of the study area. Indeed, it is likely to be perceived as an evolution of the existing electrical overhead line that passes through the study area. This is a productive rural landscape with associated landscape values, and whilst the proposed development may alter the 'landscape fabric' of the area, it does not markedly affect the prevailing landscape pattern or predominantly working rural landscape character of the area. This is considered an appropriately sited development in a robust landscape context. Consequently, the impact on landscape character (post-construction) will be of **Moderate-slight** significance and a **Negative** quality with a **Permanent** duration.

Visual impacts were assessed at four viewshed reference point locations, representing various viewing distances, angles and receptor types. The visual receptor sensitivity judgements ranged from High-medium to Medium-low. The overall significance of visual impacts was '**Slight**' at the nearest viewshed reference point (VP4) significance, with a **Negative** quality with a **Permanent** duration. At all the other viewshed reference points, the impact was deemed to be 'Imperceptible' (VP1 to VP3). This is principally a consequence of the high degree of existing screening located within the intervening low-lying landscape, which heavily reduces the visual exposure of the proposed development.

Based on the landscape and visual impact judgements provided throughout this LVIA, the proposed development is not considered to give rise to any significant landscape and visual impacts.

6.1 OVERALL SIGNIFICANCE OF IMPACT

Based on the landscape and visual impact judgements provided throughout this LVIA, the proposed Fosterstown Distribution Station development at Trim, County Meath is not considered to give rise to any significant landscape or visual impacts.

Appendix H – Landscape Mitigation Plan