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ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED COOM GREEN ENERGY PARK GRID CONNECTION

VOLUME 2 – MAIN EIAR

CHAPTER 12 - MATERIAL ASSETS, TELECOMMUNICATION, AND TRAFFIC AND TRANSPORTATION

Prepared for:

Coom Green Energy Park Ltd.

Date: **April 2026**

Document No:

P24308-FT-XX-XX-RP-XX-0001

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12. MATERIAL ASSETS, TELECOMMUNICATIONS AND TRAFFIC AND TRANSPORTATION

12.1 Introduction

This Chapter describes Material Assets, Telecommunication and Traffic and Transportation that might potentially be affected by the Proposed Development. The potential effects are initially considered without mitigation, and the residual effects post mitigation are described. The assessment considers the potential effects during all phases of the development: construction, operation and decommissioning. Appropriate mitigation measures are identified to mitigate effects where necessary.

This chapter assesses:

- Material Assets (Gas, Water, Electricity Cables etc.);
- Traffic and Transportation;
- Telecommunication.

Throughout this chapter the 'Proposed Development' refers to the elements of the project for which consent is being sought as set out in Chapter 2 – Development Description. Appropriate mitigation measures are identified to mitigate effects where necessary. Potential cumulative effects with other developments are also assessed. A full description of the Proposed Development assessed in this EIAR is provided in Chapter 2 – Development Description and comprises the following elements:

- A 110kV Underground Cable (UGC) Grid Connection Route from the permitted onsite substation at Lackendarragh to the existing Barrymore 110 kV substation located near Rathcormac, Co. Cork (also referred to herein as the ***'110kV GCR'***);
- A 33kV UGC Collector Network Route between the western and eastern arrays of the permitted Coom Green Energy Park (CGEP) development (also referred to herein as the ***'33kV CNR'***);
- A 110kV onsite substation at Lackendarragh, in line with the latest Eirgrid functional specifications (also referred to herein as ***'110kV Substation'***).

The location and general layout of the Proposed Development is shown in Figure 2.1, Volume 4 of the EIAR.

12.1.1 Study Area

The Proposed Development is located within the jurisdiction of Cork County Council.

The location of the Proposed Development is south of the Nagle Mountains. The main towns and villages within the vicinity of the proposed development include Mallow, Fermoy, Castletownroche, Rathcormac, Watergrasshill, Glenville, Carrignavar, Grenagh, Drommahane. Other settlements in the vicinity are Killavullen, Monanimy, Ballyhooly, Bottlehill, Glashaboy, Burnfort, Ballyknockane, Grange, Kilworth, Glanworth, Castlelyons/Bridebridge, County Cork.

The 110kV GCR connecting the proposed substation at Lackendarragh to the national grid at Barrymore substation is located within the jurisdiction of Cork County Council and traverses the following townlands; Knockacullata, Tooreen, Commons, Knoppoge, Carrig, Killeagh, Glannasack, Knockdoorty, Lackendarragh North, Moanlahan, Knockauncorrin, Mullentaura, Glanakip, Rathcormack-mountain, Coolnakilla, Knockananig, Coolmucky, Ballynahina, Corrin, Farran North, Farran South, Kill-Saint-Anne-North, Co. Cork.

The Proposed Development is located approximately 12km to the southeast of Mallow and approximately 13km west of Fermoy in County Cork.

The study area for this Chapter comprises elements of the existing or future transportation network, Material Assets and Telecommunication infrastructure that could potentially be affected by activities associated with the construction, operation and decommissioning of the Proposed Development.

12.2 Statement of Authority

This chapter was completed by Fehily Timoney and Company engineers and planners, Aoife Hurd, Eoin Downing, Anthony Ryan and Trevor Byrne.

Aoife Hurd is a Senior Civil Engineer at Fehily Timoney and Company working in the Energy and Planning Department. She holds a First-Class Honours Bachelor's Degree and Master's Degree in Civil, Structural and Environmental Engineering from Trinity College Dublin. She is a member of Engineers Ireland (EI) and has experience working on residential, infrastructure and renewable energy projects at all stages from concept to construction. Aoife provides technical and engineering support to the EIAR teams for a variety of commercial scale renewable energy projects.

Aoife has 3.5 years' experience in the preparation of Traffic and Transportation assessments, Air and Climate Assessments, as well as other technical chapters associated with EIAR's and environmental reports for renewable energy projects ranging from wind farms, solar farms, grid connections, battery energy storage systems and ancillary grid infrastructure projects. She also has experience in the design of renewable energy developments.

Eoin Downing is a Civil Engineer with a Bachelors Degree in Civil Engineering from University of Limerick and a Master's Degree in Sustainable Resource Management: Policy and Practice following his studies at University of Limerick and University of Galway. Eoin is a member of the engineering team within the Planning and Energy division at FT.

Anthony Ryan is a Project Planner at Fehily Timoney and Company, working in the Energy and Planning Department. Anthony holds a First-Class Honours Bachelor's Degree, and First-Class Honours Master's in Planning and Sustainable Development (MPlan) from University College Cork. Anthony has experience working on various renewable energy projects preparing EIAR chapters for wind farms, and has drafted chapters including policy, traffic and transport, air and climate, material assets (utilities), telecommunications and aviation.

Trevor is an Associate Director at Fehily Timoney and a chartered member of Engineers Ireland with over 15 years of industry experience and over 10 years' experience in the preparation of EIAR's for large scale renewable energy projects. Trevor holds a Master's degree in Sustainable Energy Systems and a first-class honours degree in Civil and Environmental Engineering. Trevor also holds an Advanced Diploma in Planning and Environmental Law from the Honourable Society of Kings Inns. Throughout his career to date, Trevor has provided technical advisory services through all stages of project delivery from feasibility assessment, impact assessment, design, expert witness, contract administration and construction.

12.2.1 Relevant Policy and Guidance Documents

As described in detail within EIAR Chapter 4 - Policy, a review of relevant policy and guidance documents was undertaken for all aspects of the Proposed Development, and to identify specific relevant Policies and Objectives relating to utility services, telecommunication, broadcasting and traffic and transport. The following guidance was adhered to during the assessment of traffic and transport in this EIAR:

- Wind Energy Development Guidelines (WEDGs), Department of the Environment, Heritage and Local Government (DoELHG, 2006);
- Best Practice Guidelines for the Irish Wind Energy Industry, Irish Wind Energy Association (2012);
- RF Measurement Assessment of Potential Wind Farm Interference to Fixed Links and Scanning Telemetry Devices, published by ERA Technology Ltd on behalf of Ofcom (2009);
- Cork County Development Plan 2022-2028, Cork County Council;
- TII Publication: Traffic and Transport Assessment Guidelines, TII, 2014;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII, 2021;
- EPA Guidelines on The Information to Be Contained In Environmental Impact Assessment Reports, EPA, 2022;
- Guidance on the preparation of the Environmental Impact Assessment Report, European Commission, 2017;
- TII Project Appraisal Guidelines for National Roads: Estimating AADT on National Roads, TII, 2016;
- TII Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections, TII, 2021;
- TII Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions) DN-GEO-03060, TII, May 2023, and DN-GEO-03031 - Rural Road Link Design May 2023;
- Guidelines for Managing Openings in Public Roads, Department of Transport, April 2017;
- ESB Networks Code of Practice for Avoiding Danger from Overhead Electricity Lines, May 2019.

12.3 Material Assets

This section provides a comprehensive overview of the Material Assets within the receiving environment in order to provide an understanding of the potential effects the Proposed Development has on them.

12.3.1 Methodology

This chapter of the EIAR assessment describes the methodology used in assessing the potential effects from the Proposed Development, and, as such, has considered Material Assets as a standalone section within this EIAR chapter. Material assets, as defined in EPA (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports* refers to built services, roads and traffic and waste management. The potential for the Proposed Development to effect roads and traffic is addressed in Section 1.4. Potential for effects on land use is addressed in many EIAR Chapters, including but not limited to, Chapter 6: Population and Human Health, Chapter 9: Biodiversity and Chapter 10: Soils, Geology and Hydrogeology. Assets of Archaeological, Architectural and Cultural Heritage are considered in Chapter 13: Archaeology, Architectural and Cultural Heritage of this EIAR. A Waste Management Plan (WMP) for the Proposed Development has been included in the CEMP, Appendix 2.2 of Volume 3 of this EIAR.

An examination of Material Assets was carried out which includes renewable and non-renewable resources and utility infrastructure. A desktop study established Material Assets of the area such as quarries and peat bogs. Infrastructure and various telecommunication companies were contacted during the scoping process to identify infrastructure in the area. Potential effects on the identified Material Assets as a result of the Proposed Development were then examined.

12.3.2 Consultation and Methodology

As part of the scoping and consultation process for the Proposed Development, and as outlined within EIAR Chapter 5 - EIA Scoping and Consultation, extensive searches of existing Material Assets were carried out using a network analysis tool, stakeholder consultation and fieldwork to identify areas where major assets exist such as high voltage electricity cables or gas mains were located.

Private and State utility companies such as EirGrid, Uisce Éireann (formerly Irish Water), ESB Networks (ESBN) and Gas Networks Ireland (GNI) were also consulted during this period.

A full description of the scoping and consultation responses received are set out in Appendix 5.1 of Volume 3 of this EIAR, and within EIAR Chapter 5 - EIA Scoping and Consultation, with a summary of the consultation responses received also presented.

12.3.3 Limitations

No limitations were encountered in the assessment of the potential effect on Material Assets and from the Proposed Development.

12.3.4 Baseline Environment

As part of the scoping and consultation process for the Proposed Development, and as detailed within EIAR Chapter 5 - EIA Scoping and Consultation, searches of existing utility services were carried out using a network analysis tool, stakeholder consultation and fieldwork to identify areas where major assets exist such as high voltage electricity cables or gas mains.

Private / State utility companies such as EirGrid, Uisce Éireann, ESB Networks (ESBN) and Gas Networks Ireland (GNI) were also consulted during this period and will be contacted to verify the existence of services prior to any construction works taking place.

No major utility infrastructure associated with ESB Electricity Wires or Gas lines were identified. Based upon consultations with Uisce Éireann and application details provided, Uisce Éireann advised that the proposed build over can be facilitated. Please refer to Appendix 12.1, Volume 3 for the Uisce Éireann Letter of Feasibility received on the 14th of August 2025.

Minor infrastructure, including telephone and electricity lines and poles were identified.

Resources at the Proposed Development Site include commercial forestry.

12.3.5 Assessment of Likely Significant Effects

12.3.5.1 Do- Nothing Scenario

If the Proposed Development were not to proceed, it is unlikely there would be changes to existing Material Assets.

12.3.5.2 Construction Phase effects

Trees felled for development purposes will be replanted at another unplanted locations as set out in Irish Forest Service Guidelines. The Proposed Development will require the felling of forestry within and around the infrastructure to accommodate the construction. The estimated area of tree clearing required for the proposed development will be approximately 17.8 ha. A felling licence will be sought from the Forest Service prior to any tree felling and will include the provision of relevant replant lands. The overall effect of the proposed development on renewable timber resources will be neutral.

The construction of the cable trenches along public roads will have a slight, negative temporary effect on the roads concerned during construction, with some roads likely to require re-surfacing. Importation of materials and equipment for the Proposed Development will also increase shipping traffic at the ports being used and increase freight on the motorway, national primary routes and regional road network. There is potential for delivery of abnormal loads to negatively effect on major road infrastructure if unmitigated. It could potentially cause traffic disturbance and damage to road infrastructure if not properly planned and assessed. This has potential to cause significant negative effect to existing roads infrastructure if unmitigated. This is assessed in Section 0 of this chapter.

12.3.5.3 Operational Phase

Once the Proposed Development is operational, the potential for negative effects on Material Assets is minimal. Maintenance of infrastructure may require small amounts of imported fill; however, the likely effect is negative, long-term and imperceptible to slight.

No effect on existing water or gas utility infrastructure is expected due to the Proposed Development during the operational phase. Further information regarding potential effects on local drinking water supplies/water schemes is described within Chapter 10 - Soils, Geology and Hydrogeology of this EIAR.

The direct positive effects from the electricity generated being connected to the national grid by the Proposed Development will give rise to a reduction in the quantity of fossil fuels required for electricity generation in the County and across the State. This will give rise to a long-term positive effect on renewable energy resource, with the majority of the Proposed Development remaining in place upon decommissioning and becoming an asset of the national grid under the management of EirGrid.

By enhancing the electrical infrastructure and grid connectivity of the area containing the Proposed Development, this facilitates the integration of renewable energy projects in the area, thus further contributing to the national and local electrical infrastructure while also streamlining grid connections and maximizing renewable energy deployment.

12.3.5.4 Decommissioning Phase

The potential effects associated with decommissioning will be similar to those associated with construction but of a reduced magnitude.

Decommissioning works will include removal of the 33kV CNR from the cable ducting that connects each turbine in the CGEP. However, the 110kV GCR and Substation will form part of the national grid and will be left in situ, which will be taken in charge of by EirGrid / ESB which will have a long-term positive effect on electricity infrastructure provision in the area and on the national grid.

No likely negative effects on Material Assets are expected during the decommissioning phase.

12.3.6 Mitigation Measures

Existing services along the Proposed 110kV GCR and 33kV CNR have been predicted through a desktop study and will be confirmed in the pre-construction surveys. This will minimise the effect in terms of disruption or damage to existing utilities. It is not intended to divert existing services but instead, where possible, the cable will be laid above or below existing services. Communication with service providers will be maintained for the duration of the construction works where required.

If services will be interrupted to accommodate construction, residents and business in proximity to the works will be informed in advance. Additionally the service providers will notify the public of any such interruptions or changes in water pressure, as is current practice (e.g. https://www.water.ie/help/supply/no-water-or-low-pressure/?map=supply-and-service-updates and https://www.esbnetworks.ie/power-outages).

Felled forestry will be replanted at alternative lands under a felling licence.

Non-renewable resources of stone will be sourced locally as far as possible to minimise transportation distances, reducing CO2 emissions.

If any damage to existing footpaths or cycle lanes occurs during the construction stage, these sections will be replaced by the civils contractor as per Guidelines for Managing Openings in Public Roads, Department of Transport, April 2017 (SD12 Footways: Concrete Permanent Reinstatement).

12.3.7 Cumulative Effects

There is potential for slight, short-term interruption of Material Assets along the Proposed Development during installation. Works along public roadways have potential to cause non-significant brief effects. Brief effect may also occur to the supply of electricity to homes and businesses as a result of temporary removal of services to accommodate cable installation. Notice will be provided to all stakeholders affected prior to works commencing.

12.3.8 Residual Effects

The Material Assets associated with the 110kV electrical infrastructure of the Proposed Development will be taken in charge of by EirGrid or ESB, to provide future long term enhanced electrical infrastructure for the region, thus providing a long-term positive residual effect on electricity infrastructure in the area.

12.4 Roads, Traffic and Transportation

12.4.1 Methodology

The assessment methodology complies with the Environmental Impact Assessment (EIA) Directive (2011/92/EU as amended by 2014/52/EU) and the Cork County Development Plan 2022 – 2028 and has been carried out in line with best practice. Regard has been had to TII publications, and other relevant guidance listed in section 12.2.1 of this chapter. The details of the Proposed Development are considered in relation to the construction, operation and decommissioning phases.

The likely traffic that will be generated by each phase of the Proposed Development is estimated to identify potential disruptions to existing road users within the study area. Based on the Proposed Development construction methodologies described in Chapter 2 and the CEMP, an estimate of the number of vehicles generated by the Proposed Development was calculated. These estimates are used to assess the effect on the road network in numerical terms.

The potential for soiling or damage to public road infrastructure through poor construction practices as well as potential health and safety hazards through poor traffic management are also identified where applicable. Potential disruption because of road, or lane closures as a result of works along public roads were also assessed.

The effects of the Proposed Development on the existing transport network are considered and described in terms of quality, duration and significance. Mitigation measures are proposed followed by identification of potential residual effects. The potential for cumulative effects from other developments was also assessed.

12.4.1.1 Sources of Information

The assessment is informed by a combination of field surveys, automatic traffic counter (ATC) data, desktop studies of potential haulage routes and local roads department consultation conducted by FT Engineers as detailed below:

- Open-source TII traffic counter information and private traffic count data carried out for historical impact assessments, accessed in December 2025;
- Ordnance survey, Tailte Eireann, Google aerial and street view mapping, accessed in December 2025;
- Cork County Council and An Coimisiún Pleanála Planning Enquiry website accessed December 2025;
- Traffic count data was obtained from 7-day traffic count surveys, conducted between the 3rd and 7th of September 2019;
- Project construction methodologies;
- Site Layout Plans.

The above sources of information have been used to identify the study area and transport routes to be assessed.

12.4.1.2 Common Abbreviations used in this Section

- AADT - Annual Average Daily Traffic
- ACP – An Coimisiún Pleanála
- CEMP - Construction Environmental Management Plan
- LGV – Light Goods Vehicle
- HGV – Heavy Goods Vehicle
- TII - Transport Infrastructure Ireland
- TMP - Traffic Management Plan

Please refer to the glossary of terms and abbreviations in Appendix 1.2 Volume 3.

12.4.1.3 Consultation

Direct Route (DR), operating under contract to Transport Infrastructure Ireland (TII) were consulted as part of the EIAR scoping process in 2019 and 2025 with a subsequent virtual meeting held on the 5th of September 2025. In a response, DR provided recommendations relating to the proposed 110kV GCR crossing under the M8. A copy of the correspondence from TII is included in Chapter 5 – EIA Scoping and Consultation of Volume 2 of the EIAR.

Cork County Council (CCC) Roads Department was consulted throughout the EIAR scoping phase. An initial meeting was held with CCC (Fermoy District) on the 18th of June 2019 to discuss the Proposed Development and its potential effects on the existing road network. A meeting was also held with CCC (Mallow District) on 1 July 2019. The Proposed Development, if consented, would be located within both Fermoy and Mallow municipal districts. A pre-application consultation with CCC was held on the 3rd of June 2025 where the planning authority issued a list of recommendations. A subsequent pre-application consultation was held on the 4th and 25th of February 2026. A copy of the correspondence with CCC is included in Chapter 5 – Scoping and Consultation, Volume 2 of the EIAR.

An Garda Síochána were also consulted during the EIAR scoping phase. A copy of the correspondence is included in Chapter 5 – Scoping and Consultation, Volume 2 of the EIAR.

12.4.2 Limitations

No limitations were encountered in the assessment of the potential effect on Traffic and Transportation from the Proposed Development.

12.4.3 Baseline Environment

Roads in the Republic of Ireland are classified as motorways, national (primary and secondary), regional and local roads. Transport Infrastructure Ireland (TII) has overall responsibility for the planning and supervision of the construction and maintenance of motorways, national primary and secondary roads. The local authorities have responsibility for all non-national roads. The hierarchy of roads throughout Ireland is outlined in the below table:

Table 12-1: Road Categories

Road Category	Description
Motorways	These are high quality multiple lane roads with limited grade separated junctions. They are high speed (120km/per hour) roads predominantly provided to facilitate strategic traffic with reduced journey times.
National Primary Roads	These are predominantly single carriageways, with some that are dual carriageways. Generally high speed (100km/per hour) roads that facilitate strategic traffic, with reduced journey times.
National Secondary Roads	These are medium distance through-routes connecting towns, serving medium to large geographical areas and linking to primary routes to form a homogeneous arterial network.
Regional Roads	Predominantly single carriageway roads of regional and local importance. These roads generally receive more frequent maintenance criteria than Local Roads and therefore tend to be structurally sound.
Local Roads (Primary, Secondary and Tertiary)	The local road system is operated in three tiers defining local importance, usage and maintenance priorities. They form a network of single carriageway roads of varying quality.

The transport network comprising the study area is presented in Volume 4, Figure 12.1.

12.4.3.1 Motorways

The nearest motorway to the Proposed Development is the M8 which connects Cork city to Dublin city via the M7 and the N7. It connects to the M7 west of Portlaoise. The road is the arterial route for traffic connecting Cork to Dublin. The M8 is located approximately 10km to the east of the proposed Coom Green Energy Park site. The proposed 110kV GCR transverses the M8 near the townland of Corrin, shortly before terminating at the existing Barrymore 110kV substation.

12.4.3.2 National Roads

The closest national route to the west of the Proposed Development is the N20. The N20 is the primary route connecting Cork City to Limerick City via the M20 outside the village of Patrickswell, Co. Limerick and passes through the towns of Charleville, Buttevant and Mallow. It is located approximately 5.5km (straight line distance) west of the Proposed 33 kV CNR at its closest point.

The closest national route to the north of the site is the N72, which connects Killorglin, Co. Kerry to Dungarvan, Co. Waterford and passes through the towns of Killarney, Rathmore, Mallow and Fermoy. It is located approximately 3.5km (straight line distance) north of the Proposed 33kV CNR at its closest point.

The N73 is a national road which connects the N72 outside Mallow, Co. Cork to the M8 outside Mitchelstown, Co. Cork and passes through the village of Killdorrey. It is located approximately 11.3km (straight line distance) northwest of the Proposed 33kV CNR at its closest point.

12.4.3.3 Regional Roads

The Proposed 110 kV GCR travels along the R639 for c. 0.2km immediately after crossing the M8 near Corrin. The R639 is a regional road that connects the N72 in Fermoy, Co. Cork to the M8 outside of Sallybrook, Co. Cork and passes through the towns of Rathcormac and Watergrasshill.

Additionally, the R614 is located approximately 4.2km to the south of the Proposed 33kV CNR at its closest point. The R614 connects Rathcormac to the east, with Cork City to the south.

12.4.3.4 Local Roads

The Proposed 110kV GCR crosses the L5756 shortly after exiting the Proposed 110kV Substation at Lackendarragh. The Proposed 110kV GCR travels along the L1505 for c. 4.4 km, the L1510 for c. 2.6km, the L5770 for c. 3.4km before travelling along the R639. Following this, the Proposed 110kV GCR travels along the L1517 for c. 1.7km before terminating at the existing Barrymore 110kV substation.

The Proposed 33kV CNR crosses the L1501 shortly after exiting the Proposed 110kV Substation at Lackendarragh. The Proposed 33 kV CNR travels along the L-1501 for c. 700m, the L-2956 for c. 400m and the L-6950 for c. 700m before entering the Coom Green Energy Park site.

12.4.3.5 Other Transport Network Infrastructure Within the Study Area

The Cork City to Mallow rail corridor approximately follows the route of the N20 and is located c. 5.4 km (straight line distance) west of the Proposed 33kV CNR at its closest point.

The transport network comprising the study area is presented in Volume 4, Figure 12.1.

12.4.3.6 Existing Environment Traffic Volumes

Existing traffic volumes on roads in the study area are shown in Table 12-2 below:

Table 12-2: Baseline Traffic Volumes[1] (2024)

Road	Baseline AADT		
	HGV	LGV	AADT
N72 (between Fermoy and Ballyhooley)	132	2937	3069
N20 (between Blarney and Mallow)	1055	16522	17577
M8 (Between J15 and J16)	1870	17417	19287
M8 Jn15 South Side On/Off-Slips	64	1873	1937
M8 Jnc15 Southbound Off-Slip	91	531	622
M8 Jnc15 Northbound On-Slip	75	557	632
R639	283	6623	6906

Data sourced from TII Traffic Data: https://trafficdata.tii.ie/publicmultinodemap.asp

[1] Data sourced from TII Traffic Data: https://trafficdata.tii.ie/publicmultinodemap.asp

The AADT figures presented in the table above will be projected to a proposed construction commencement year of 2029 from 2024 source data in Section 13.6 of this chapter in accordance with NRA Project Appraisal Guidelines for National Roads: Unit 5.5 Link-Based Traffic Growth Forecasting, 2011 and TII Project Appraisal Guidelines for National Roads: Unit 5.3 – Travel Demand Projections, 2021.

12.4.4 Proposed Development

A large infrastructural project of this nature will generate additional traffic on the existing road network as a result of the construction, operation and decommissioning. A detailed description of the Proposed Development assessed in this EIAR is provided in Chapter 2 – Development Description.

The following sections describe the Proposed Development in the context of the existing traffic conditions and transportation network.

12.4.4.1 Construction Programming

As described in Chapter 2, the construction of the Proposed Development is expected to take 12 months. Therefore, a 12-month construction programme was assumed for construction traffic generation movement calculations as part of this assessment in order to assess for worst case as it would generate the highest peak volume of traffic (i.e. an accelerated construction programme).

12.4.4.2 Felling

The permanent felling of approximately 17.8 ha is required to accommodate the construction of the Proposed Development. See Chapter 2 for more details regards the felling.

12.4.4.3 Abnormal Load Delivery Route and Haul Route

This section presents the routes taken to reach the entrances for construction deliveries, and infrastructure components. In construction, materials and plant will be delivered to the Proposed Development. The routes will include some of the surrounding road network which will need to cater for the additional traffic associated with the Proposed Development.

Traffic associated with the construction phase include:

- HGVs carrying aggregates, ducting and other materials associated with construction of the Proposed Development;
- HGVs carrying building materials for the substation and related electrical equipment, cabling, etc.;
- HGVs carrying plant and fuel;
- HGVs exporting site waste;
- Private cars and vans for the commuting workforce.

12.4.4.3.1 Abnormal Load Delivery

Most loads associated with this Proposed Development are of standard size and can navigate the national road network without transport issues. The delivery of substation components including gantries, towers, transformers, etc. is a specialist transport operation owing to the oversized loads involved.

Swept Path Analysis was carried out by the client showing that the transformer can access the substation area. See Schedule of Planning Drawings in Appendix 2.3, Volume 3 of the EIAR.

The oversized loads required for the Grid Connection, will follow the route to the 110kV Substation site as outlined below. It is proposed that the 110kV Substation site shall be accessed via the following delivery route:

Loads travelling from Ringaskiddy:

1. Depart the port turning right onto the N28;
2. Continue on the N28 for 12.2km;
3. Merge onto the N40 going eastbound;
4. Continue north on the N40 onto the M8 for 35.7km;
5. Exit the M8 at the no. 14 junction turning onto the R639;
6. Continue south on the R639 for 2.6km;
7. Turn right at the N72/R639 junction onto the N72;
8. Continue west on the N72 for 7.8km;
9. Turn left at the L-1506/N72 onto the L-1506;
10. Continue on the L-1506 for 500m;
11. Turn left at the L-1506/ L-1507 onto the L-1507;
12. Continue south on the L-1507 for 500m approaching a roundabout;
13. Take the 2nd exit of the roundabout onto the L-1501;
14. Continue south along the L-1501 and loads will reach the 110kV Substation entrance on the left after 5.5km.

For abnormal load deliveries, the Proposed Development will utilise the TDR from the consented CGEP development, as this has already been assessed with accommodation works being provided. Therefore, no new accommodation works are required along the route.

12.4.4.3.2 Haul Route

The Proposed Development will utilise the same Haul Routes as the consented CGEP development. For this development, 3 no. haul routes are proposed for the delivery of construction materials from quarries, such as concrete and aggregates, using HGVs. The surrounding quarries currently in operation and indicative haul routes to the Proposed Development from each of these have been identified.

Indicative haul routes for the Proposed Development are shown in Figure 12.2, Volume 4 of the EIAR.

The list of quarries is as follows:

- Roadstone Mallow Quarry, Lackanamona, Mallow, Co. Cork. Located approximately 20km north of the Bottlehill entrance and 24km northwest of the Lackendarragh North entrance.
- Breedon Ireland Bweeng Quarry, Carrigcleena, Bweeng, Co. Cork. Located approximately 15km northwest of the Bottlehill entrance and 32km southwest of the Lackendarragh North entrance.
- Finbarr O'Neill Ltd. Glenville Quarry, Lyrevarrig, Glenville, Co. Cork. Located approximately 12km northeast of the Bottlehill entrance and 9km southwest of the Lackendarragh North entrance.

These quarries can provide aggregates for both road construction and concrete, and consideration has been made to keep loads on the highest road class for most of the route to minimise traffic disruption. The location of these licensed quarries and the haul routes to the Proposed Development are shown in Figure 12.2, Volume 4 of the EIAR.

12.4.4.4 Site Access

The Proposed Development will utilise the same site accesses as the consented CGEP development and is accessible from both the east and west via the N72 and N20 national roads respectively and local road network. Access from the east is via the M8 motorway and N72 national road, turning south from the east of the village of Ballyhooly, with the route then travelling along the local road network for approximately 9 km. Access to the site from the west is via the N20 national road and along the local road network for approximately 3.5 km to an existing Coillte forestry entrance which will be upgraded and utilised for the Proposed Development.

For the Proposed Development, the entrance located in Lackendarragh North will facilitate access for the construction of the proposed 110kV substation off the L-1501 local road. The new site entrance to the proposed Lackendarragh North substation will be constructed in line with Cork County Council requirements.

The access points have been selected with consideration for safety of public road users, construction staff and to ensure that it can be constructed to comply with the requirements of both Cork County Council and TII design requirements for direct accesses.

All HGV traffic travelling to the site shall only be permitted to use approved transport routes and site access points as identified in the Traffic Management Plan (TMP) contained in Section 4.3.8 of the CEMP which also includes details of proposed temporary road closures and diversions for public road users during the construction phase.

The layout of site access points is shown on Figure 2.2, Volume 4 of the EIAR and on planning application drawings.

Access tracks will be installed over the 100kV GCR and the 33kV CNR routes, where it passes through Coillte lands.

12.4.4.5 Waste Management

Authorised waste management facilities have been identified in the greater County Cork area as listed on the Local Authority Waste Facility Register by the National Waste Collection Permit Office. The authorised waste facilities utilised during the construction and decommissioning of the Proposed Development will depend on the contractors appointed and will depend on the capacity of the various facilities at the time of construction and decommissioning. A list of existing licensed waste facilities in proximity to the Proposed Development are presented in Table 12-3 below. These facilities were identified at the time of the preparation of this EIAR.

Table 12-3: Licensed Waste Facilities in the Vicinity of the Proposed Development

Facility	Location	Type of wasted accepted	Straight Line Distance from Site (km)
Mallow Contracts Limited	Ballymorisheen, Grenagh, Co. Cork	Soils and Stones	1.5 km South
Mallow Contracts Ltd	Island Burnfort, Mallow, Co. Cork	Soils and Stones	3.6 km Northwest
Enva Ireland Ltd	Ballynageehy, Mallow, Co. Cork	Sludge from Wastewater treatment	4.5 km Northwest
Auto Dismantlers Limited	Scartbarry, Watergrasshill, Co. Cork.	End of Life Vehicles, iron and steel.	6.8 km South
Enva Ireland Ltd	Fiddane North, Mallow, Co. Cork	Sludge from Wastewater treatment	7 km Northwest
John Shanahan	Killuragh, Ballygriffin, Mallow, Co. Cork	End of Life Vehicles	7.5 km North
Tanner Bros. Limited	Aghern East, Conna, Co. Cork	End of Life Vehicles, iron and steel.	7.8 km East
Glenanore Cartons	Ballygrellihan, Castletownroche, Co. Cork	Paper, cardboard and plastic	8.2 km North
Uisce Éireann	Castlelyons	Waste Water Treatment Plant	1.5 km Southeast
Uisce Éireann	Fermoy	Waste Water Treatment Plant	3 km North
Uisce Éireann	Rathcormac	Waste Water Treatment Plant	3 km South
Uisce Éireann	Glenville	Waste Water Treatment Plant	3 km Southeast
Uisce Éireann	Ballyhooly	Waste Water Treatment Plant	5.5 km North
Uisce Éireann	Carrignavar	Waste Water Treatment Plant	7.8 km South
Uisce Éireann	Kilworth	Waste Water Treatment Plant	8 km Northeast
Uisce Éireann	Killavullen	Waste Water Treatment Plant	8km North
Uisce Éireann	Castletownroche	Waste Water Treatment Plant	8.5 km North
Uisce Éireann	Whitechurch	Waste Water Treatment Plant	9 km South
Uisce Éireann	Grenagh	Waste Water Treatment Plant	9 km Southwest
Uisce Éireann	Glanworth	Waste Water Treatment Plant	9 km North
Uisce Éireann	Watergrasshill	Waste Water Treatment Plant	9.5 km South
Uisce Éireann	Conna	Waste Water Treatment Plant	10 km East

12.4.4.6 Grid Connection

This section summarises the information regarding the grid connection. For a more detailed description see Section 2.4.2 of Chapter 2 Development Description.

12.4.4.6.1 110 kV Underground Cable (UGC) Grid Connection Route (GCR)

The 110kV GCR (shown in Figure 2.2.1, Volume 4) is approximately 13.9km in length and traverses in a western direction from the Barrymore 110kV substation to the Coom Green Energy Park (CGEP) 110kV substation utilising public road networks and permitted wind farm access tracks. No overhead lines are required for this connection.

There is approximately 1.8km of the 110kV GCR within private lands, of which 1.5km is within the consented CGEP site boundary, and an additional 12.1km within public road.

For a detailed description of the construction methodologies associated with the Proposed Development, please refer to the TLI Construction Methodology Report contained in Appendix 2.1, Volume 3.

The 110kV GCR shall feature horizontal directional drilling (HDD) to cross the M8 Motorway. See Chapter 2 – Development Description for further details of the M8 Motorway crossing. Details on watercourse crossings are summarised in Chapter 11 – Hydrology and Water Quality.

Cabling works will involve the installation of ducting, joint bays, drainage and ancillary infrastructure and the subsequent running of cables along private lands and the existing road network. This will require delivery of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches.

12.4.4.6.1.1 Cable Ducts and Trenches

A minimum separation distance of 300 mm will be maintained with existing services. Usually, the new cables will be laid below existing services where possible.

The cable trench is typically 825mm wide by 1,315mm deep, with variations on this design to adapt to service crossings and watercourse crossings, etc. The ducts will be installed, the trench reinstated in accordance with landowner/ Cork County Council specification. Construction method statements and templates will be implemented to ensure that the underground HV ducting is installed in accordance with the correct requirements, materials, and specifications of ESBN and EirGrid.

Details of the cable and trench installation and construction methodologies are contained within the TLI Construction Methodology Report in EIAR Volume 3, Appendix 2.1 and the CEMP in Appendix 2.2, Volume 3.

It is expected that full road closures will be put in place to facilitate cabling works rather than partial road closures or stop/go systems. This will enable the works to be completed as quickly and as safely as possible, with minimal disruption time for residents of the area. These would be undertaken on a rolling basis with short sections closed for short periods before moving onto the next section. This is described in more detail in the TMP contained in Appendix 2.2, Volume 3.

The road will be reinstated in accordance with the Guidelines for Managing Openings in Public Roads and to a standard agreed with Cork County Council. Road opening licences supported by a detailed Traffic Management Plan (TMP) will be secured prior to works and will be followed to maintain public access along the route during the trenching and reinstatement works.

Refer to the TMP for further detail and the CEMP (Appendix 2.2, Volume 3), and the TLI Construction Methodology Report (Appendix 2.1, Volume 3) for detailed construction methodologies.

12.4.4.6.1.2 110kV Joint Bays

There are 20 no. joint bays along the 110kV GCR. Of these, 17 no. shall be located in public roads, and 3 no. shall be located on private lands.

Joint bays are pre-cast concrete chambers (typically 6m x 2.5m x 2.05m in size) where individual lengths of cables are joined to form one continuous cable. They are to be installed below finished ground level, approximately every 650m - 850m along the cable route to facilitate the jointing of the 110 kV GCR.

Joint Bays will be located in the non-wheel bearing strip of roadways where possible, however given the narrow profile of local roads this may not always be possible.

The locations of joint bays along the 110kV GCR are shown in Figure 2.2.1, Volume 4, and planning application drawings.

Further details on joint bay construction methodologies can be found in the TLI Construction Methodology Report in EIAR Volume 3.

12.4.4.6.1.3 Water Crossings

The 110 kV GCR will cross an EPA-mapped WFD watercourse at one location, and the 33 kV CNR will cross EPA-mapped WFD watercourses at three locations. In addition to these crossings of WFD watercourses, there are 63 no. minor watercourse crossings (small streams and man-made drains) along the proposed route. For details on all watercourse crossings, please refer to Chapter 11 - Hydrology and Water Quality and see Figure 11-4, Volume 4; for the crossing locations.

Horizontal directional drilling (HDD) will be employed at several locations along the 110kV GCR as part of the Proposed Development. See Chapter 11, Section 11.6 for more information on water crossings, where their location and method of crossing are also stated.

Crossing of existing culverts will be implemented using open trenching with either an undercrossing or an overcrossing, depending on the depth of the culvert.

The proposed crossing designs have been designed in line with Inland Fisheries Ireland (IFI) requirements for salmonid watercourses as included in their 2016 'Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016)' and TII 'Guidelines for the Crossing of Watercourses During the Construction of Road Schemes (NRA, 2008)'. Details of proposed crossing structures are presented in the accompanying planning application drawings.

The watercourse crossing construction methodologies can be found in the TLI Construction Methodology Report in EIAR Volume 3, Appendix 2.1 and the CEMP in Appendix 2.2, Volume 3.

12.4.4.6.1.4 Crossing of the M8 Motorway

The proposed 110kV GCR will cross the M8 Cork to Fermoy Motorway at Corrin View Estate, south of Junction 15, as shown on the accompanying planning application drawings. See Schedule of Planning Drawings in Appendix 2.3, Volume 3. Horizontal directional drilling (HDD) will be used to traverse beneath both carriageways of the M8.

The locations of the launch and reception pits will be adequately spaced from the carriageway to ensure the bore is at such depth as not to conflict with the drainage or surface of the motorway or associated embankments.

There is sufficient room available to accommodate the necessary equipment. The cables will be laid at sufficient depth below the motorway to stay below the motorway drainage and without effecting the motorway foundations.

The locations of start and finish points for the HDD have been identified following desktop assessments, site visits and technical consultation with TII, Cork County Council and Direct Route.

12.4.4.6.2 33 kV Underground Cable (UGC) Collector Network Route (CNR)

The 33kV CNR (shown in Figure 2.2.2, Volume 4) is approximately 15.8km in length and traverses in an eastern direction from the western wind parcel of the permitted Coom Green Energy Park (CGEP) to the permitted substation at Lackendarragh North using public roads, commercial Coillte forestry lands and private agricultural lands.

Of the total 15.8 km 33 kV CNR length, 14.7 km is located within third-party lands and 1.1 km within public road. Approximately 7.1 km of the CNR is located outside the permitted CGEP development boundary. Of this, 1.1 km is location in public roads with 6 km located in private lands.

For a detailed description of the proposed 33kV CNR, please refer to the TLI Construction Methodology Report in Appendix 2.1, Volume 3.

Connection works will involve the installation of ducting, joint bays, drainage and ancillary infrastructure and the subsequent running of cables along private lands and the existing road network. This will require delivery of plant and construction materials, followed by excavation, laying of cables and subsequent reinstatement of trenches.

The 33kV CNR is shown on Figure 2.2.2, Volume 4 and accompanying planning application drawings.

12.4.4.6.2.1 Cable Ducts and Trenches

The 33kV CNR will transmit electricity via a three-phase supply, using three individual conductors (or cables) per circuit. Each conductor will be installed in a separate duct, typically laid in a trefoil formation, though flat formation may be used where required.

The cable trench is typically 450 mm wide and 1250 mm deep. In areas requiring a triple circuit, the trench will have a width of 1550 mm and depth of 1250 mm. Trench dimensions may vary at watercourse and service crossings.

Duct installation and trench reinstatement will follow the requirements of Cork County Council when within public roads, and landowner specifications on private land.

Details of the cable and trench installation and construction methodologies are contained within the TLI Construction Methodology Report in Appendix 2.1, Volume 3.

12.4.4.6.2.2 33kV Joint Slabs

There are 23 no. joint slabs along the proposed 33kV CNR.

Joints slabs are to be installed approximately every 1,000m - 1,200m along the 33kV CNR to facilitate the jointing of 2 no. lengths of cabling. Joint slabs are typically 2.5m x 1.575m x 0.2m concrete slabs installed below finished ground level and will be located in the non-wheel bearing strip of roadways / access tracks where possible.

The locations of all joint slabs along the 33kV CNR are shown on planning application drawings. See schedule of drawings contained within Appendix 2.3, Volume 3 of the EIAR.

Further details on joint slab construction methodologies can be found in the TLI Construction Methodology Report in Appendix 2.1, Volume 3.

12.4.4.6.2.3 Water Crossings

The 33 kV CNR traverses 2 no. EPA mapped WFD Watercourses: the COOM_010, and the BRIDE (BLACKWATER)_010. The COOM_010 shall be traversed by HDD at 2 no. locations; one of which is located within the permitted CGEP development site where the internal wind farm access track crosses the river. The BRIDE (BLACKWATER)_010 shall be crossed by placing the proposed cable ducts in an existing stone arched bridge at Chimneyfield. The latter crossing also traverses the associated Blackwater River (Cork/Waterford) SAC. The proposed crossing methods avoid in-stream works within the watercourses or SAC.

Details of other water and service crossings are contained in the TLI Construction Methodology Report in Appendix 2.1, Volume 3, and Chapter 10.

Details of water crossing methodologies can be found in the TLI Construction Methodology Report in Appendix 2.1, Volume 3 and the CEMP in EIAR Volume 3, Appendix 2.2.

12.4.4.6.3 110 kV Substation

It is proposed to construct a 110kV onsite substation at Lackendarragh North, as shown in Figure 2.1, Volume 4 of the EIAR which will meet current EirGrid specifications.

The dimensions of the substation compound will be approximately 115 m x 145 m (16,571 m^2) and will include a 110kV substation control building and electrical components necessary to export the electricity generated from the CGEP wind farm to the national grid including a transformer compound and busbar compound.

The control building will include an Independent Power Producer (IPP) Medium Voltage (MV) switch room and grid operator control rooms, an office space and welfare facilities for staff during the operational phase of the Development.

The 110kV substation EirGrid control building shall be single story with an area of approximately 450m^2. The IPP control building shall be single story with an area of approximately 300m^2.

The substation compounds will be surrounded by a ca. 2.6m high steel palisade fence and internal fences will also be provided to segregate different areas within the main substation compound.

Lighting will be required on site, and this will be provided by lighting poles located around the substation and exterior wall mounted lights on the control buildings.

12.4.5 Assessment of Likely Significant Effects

Potential effects of the Proposed Development are outlined below, these are categorised in relation to the construction phase, operational phase and decommissioning of the Proposed Development. The Do-nothing Scenario is also detailed.

12.4.5.1 Do-Nothing Scenario

If the Proposed Development is not constructed, there will be no change to the current road network and existing traffic patterns within the study area.

12.4.5.2 Construction Phase

The construction activities associated with the Proposed Development will lead to additional construction related traffic on the existing public road network over the duration of the construction works. These effects will include:

- Heavy Goods Vehicles (HGVs) transporting materials to and from the site, including cabling and electrical components.
- HGVs transporting conventional earthworks machinery such as excavators, dumper trucks and rollers.
- Fuel trucks transporting fuel for plant.
- Light Goods Vehicles (LGVs) such as cars, 4x4s and vans used by the workers and supervisory staff involved in the construction works.
- Oversized loads delivery including substation components (more details below).

Without appropriate mitigation measures, the proposed works have the potential to lead to a negative effect on the existing road network including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

12.4.5.2.1 Construction Traffic Related Effects

The Proposed Development construction works will involve constantly moving the working area as the cable installation works progress. Grid works within the public road corridor are estimated to take approximately 7 months. These works will lead to additional construction traffic associated with the cable route construction.

12.4.5.2.2 Road/Lane Closure Related Effects

The Proposed Development construction works will require a combination of temporary road closures with traffic diversions and temporary lane closures along the Proposed 110kV GCR and 33kV CNR. Refer to Figure 12.3, Volume 4 of the EIAR for indicative Temporary Road Closure and Route Diversion Options.

All road works will be subject to a road opening license, but it is anticipated that the cable installation along local roads will be advanced using a combination of rolling lane closures and temporary road closures where the existing road width is insufficient to accommodate an open lane for traffic to pass the works area.

The grid connection cable works by its nature will be isolated to a relatively small works area which will move on a daily basis. Effects associated with the works will be experienced on the road network in the immediate vicinity to the works area.

Off-line sections of the Proposed 110kV GCR and 33kV CNR through private lands will not generate an effect to existing traffic flows.

Temporary road closures will be required at specific locations for the installation of joint bays and cable pulling and jointing operations at later dates. These activities are isolated and carried out in under a day at each location. Without appropriate mitigation measures, the proposed works have the potential to lead to a negative effect on the existing road network including:

- Delay and disruption to road users;
- Road safety issues should the works not be carried out in line with good traffic management practices;
- Inappropriate parking of construction related vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads;
- Damage to existing road surface.

12.4.5.2.3 Abnormal Load Delivery Route

The delivery of substation components including gantries, towers, transformers, etc. is a specialist transport operation owing to the oversized loads involved.

These deliveries will be carried out during off-peak times and will be done using a convoy and a specialist heavy haulage company. This will ensure the effects of the abnormal load deliveries on the existing road network, good traffic management, public health and safety are minimised.

These effects are short term in duration and slight in significance and considered likely during the construction stage.

12.4.5.2.4 Felling

Tree felling will be required as part of the Proposed Development. Felling of coniferous forestry is required to facilitate construction and operation of the Proposed Development. Overall, 17.8 ha of felling is required.

For the purposes of assessing worst case, it has been assumed that clearance felling for the Proposed Development will take place at the start of the construction programme in advance of the commencement of the main balance of plant construction works for the consented CGEP development.

Felling of existing forestry is required for the Proposed Development and felled material will be sent to the following sawmills that are located in the vicinity of the proposed development:

- Glennon Brothers Sawmills, Farran House, Fermoy, Co. Cork;
- Duhallow Sawmills, Dromahoe, Dromagh, Co. Cork;
- McCarthy Sawmills, Ballineadig, Ovens, Co. Cork;
- Patrick Sheehan Sawmills Ltd, Cullenagh, Ballyporeen, Co. Tipperary;
- O'Keeffe Sawmills, Deerpark North, Lismore, Co. Waterford.

All of the above sawmills are located close to motorways and national routes and are easily accessible from the Proposed Development transport routes and are not expected to result in any significant adverse effects on the transport network.

12.4.5.3 Operational Phase

Traffic effects associated with the operational phase of the Proposed Development will be associated with the grid network operator personnel visiting the substation, and maintenance staff.

Unforeseen or unplanned events such as emergency repair works could potentially require the mobilisation of construction plant and personnel to site. The proposed 110 kV Substation has been designed in accordance with network operator requirements with welfare facilities. However, they will not require full time operational staff and will be largely automated with occasional visits from maintenance teams. A cable fault along the grid connection could potentially require temporary road works for intrusive investigations and repair. However, these unplanned events are extremely unlikely to occur.

Therefore, it is predicted that the operational phase of the Proposed Development will not have a significant effect.

The likelihood of significant adverse effects from the operational phase is negligible. The vast majority of traffic is minor, and the events that could cause significant effects are unlikely to pose a credible risk to the road network.

12.4.5.4 Decommissioning Phase

Grid connection infrastructure including the on-site substation and ancillary electrical equipment will form part of the national grid and will be left in situ.

The 33 kV underground electrical and fibre optic cabling that connects each turbine will be removed from the cable ducting. The cabling will be pulled from the cable duct using a mechanical winch which will extract the cable and re-roll it on to a cable drum. This will be undertaken at each of the joint bays/pull pits along the cable. The access track will be excavated using a mechanical excavator at each cable pulling pit location and will be fully re-instated once the cables are removed. The cable ducting will be left in-situ as it is considered the most environmentally prudent option, avoiding unnecessary excavation and soil disturbance for an underground element that is not visible.

The likelihood of significant effects from the decommissioning phase is considered low. The traffic effect associated with the decommissioning phase will be significantly less than the construction phase due to the considerably lower number of vehicle movements.

A detailed decommissioning plan will be agreed in advance of construction with Cork County Council.

12.4.6 Traffic Assessment

It is estimated that the construction period for the Proposed Development will last up to 12 months. Please see the Construction Programme in Chapter 2, Table 2-1. Also note that this Programme will sit within the overall CGEP Development Construction Programme.

The development will be divided into a number of phases for the purposes of construction programming. Construction will be phased based on the main activities underway during a given period and to minimise the level of effect of the construction on the local road network, residents and the wider community.

It is expected that construction works will commence with mobilisation and site set up, site clearance and felling, some of which will be carried out previously as part of the permitted CGEP Development Construction Programme within which the Proposed Development Programme sits.

This will be followed by the installation of the 110 kV GCR and 33 kV CNR. In parallel with these works the 110 kV Substation will be completed. Construction will be finalised with landscaping, reinstatement and demobilisation.

The distribution of expected construction related traffic associated with the Proposed Development is presented in Chapter 2, Table 2-1. This is based on an indicative construction programme and will to refined/updated subject to planning consent being granted.

12.4.6.1 Construction Phase

The estimated construction phase traffic on the surrounding road network has been calculated by estimating the number of vehicles required for each phase of the Proposed Development (construction, operation and decommissioning). The number of vehicles is then converted to the equivalent two-way trips, whereby every vehicle will generate two trips, one to and one from the site.

In order to assess the effect of the additional construction related traffic on the existing road network it is first required to estimate the amount of construction traffic that will be generated (trip generation) as a result of the Proposed Development.

This assessment was done by estimating the amount of traffic, in the form of heavy goods vehicles (HGV) and light goods vehicles (LGV) that will be generated during the construction phase and then distributing it over the duration of the construction programme. In determining the number of 'trips' the estimated number of HGV vehicles was multiplied by a factor of 2 to account for (return trips) a single trip 'in' and a corresponding single trip 'out'.

In the case of LGVs, the estimated number of vehicles was multiplied by 2.5 to account for some additional LGV movements e.g. some workers taking lunch breaks in the local area. The analysis allowed for a total number of trips per month to be calculated. This could be translated to annual average trips per day (AADT).

Some key assumptions taken when preparing the trip generation estimates include:

- An average ready mix concrete truck carries a load of approximately 8m^3 of concrete;
- An average tipper truck carries approximately 10m^3 of soil/rock/aggregate;
- A construction period of 12 months is expected based on the nature and scale of the proposed works. To assess for worst case in terms traffic volumes per day, a 12-month construction programme has been assumed here;
- It is expected following intrusive site investigations that site won material from the site will provide sufficient aggregates for general and engineering fill purposes and that surface coarse aggregates will be imported from local quarries. More detail on material volumes can be found in Chapter 10: Soils, Geology and Hydrogeology.

The transport routes have been reviewed and inspected on site and are considered suitable to accommodate delivery vehicles in terms of alignment, condition and width. The equipment for the site will be delivered to site on HGVs. These will be similar in size and nature to those which already use this local road network for the purposes of agricultural deliveries (such as fertilizer and feedstocks) to the local farms in the area.

The construction phase for the Proposed Development will result in additional traffic on the roads travelling to the development, in particular the M8, N72, N20 and R639. This additional traffic will include the following:

- Construction worker vehicles.
- Vehicles carrying conventional earthworks equipment such as an excavator, roller, road paving equipment, heavy goods vehicles (HGVs), forklifts and a petrol/diesel powered generator.
- Delivery vehicles carrying conventional construction materials, e.g. aggregate.
- Delivery vehicles carrying electrical cabling, Electrical skids (containing inverters, transformers and switchgear) and electrical equipment for the on-site transformer compound.

It is estimated that the construction phase for the proposed development will lead to 12,711 additional HGV trips (two-way) over the duration of the installation works which is estimated to last 12 months. An average workforce of 10 no. site staff is anticipated for the construction of the substation and 5 no. site staff for the grid connection cable works.

Calculations of HGV movements associated with the construction of the Proposed Development indicate an average daily increase of 22 HGV trips per day. The works will generate an average of 19 LGV trips for site staff per day over a 12-month construction programme.

The results of traffic calculations for the Proposed Development are shown in the Tables and Plates below.

The predicted baseline AADT during the estimated construction year of 2029 for the surrounding road network is presented in Table 12-4, Table 12-5, and Table 12-6 show the HGV and LGV average and peak construction traffic effects respectively.

Table 12-4: Predicted Baseline AADT Volumes with Combined HGV and LGV Construction Traffic

Location	Predicted Baseline AADT During Construction Start 2029	Average Daily Trips Generated by Development (Combined)	Predicted Combined LGV & HGV Average AADT During Construction	Average Daily Trips Generated by Development (Combined) Peak Construction Months	Predicted Combined LGV & HGV Peak AADT During Construction
N72 (between Fermoy and Ballyhooley)	3254	41	3295	44	3299
N20 (between Blarney and Mallow)	18655	41	18697	44	18700
M8 (Between J15 and J16)	20513	41	20554	44	20557
M8 Jn15 South Side On/Off-Slips	2053	41	2094	44	2097
M8 Jnc15 Southbound Off-Slip	663	41	704	44	708
M8 Jnc15 Northbound On-Slip	673	41	714	44	717
R639	7322	41	7363	44	7366

Table 12-5: Predicted AADT Volumes with Peak HGV and LGV Construction Traffic

Location	HGV AADT Pre-Development	Average Daily HGV Trips Generated by Development	Predicted HGV AADT and Development HGV's During Construction Year (2029)	LGV AADT Pre-Development	Average Daily LGV Trips Generated by Development	Predicted LGV AADT and Development LGV's During Construction Year (2029)
N72 (between Fermoy and Ballyhooley)	132	22	170	2937	19	3125
N20 (between Blarney and Mallow)	1055	22	1201	16522	19	17495
M8 (Between J15 and J16)	1871	22	2113	17416	19	18441
M8 Jn15 South Side On/Off-Slips	64	22	94	1873	19	2000
M8 Jnc15 Southbound Off-Slip	92	22	125	530	19	579
M8 Jnc15 Northbound On-Slip	75	22	106	557	19	608
R639	284	22	340	6622	19	7023

Table 12-6: Predicted AADT Volumes with Peak HGV and LGV Construction Traffic

Location	HGV AADT Pre-Development	Peak Daily HGV Trips Generated by Development	Predicted HGV AADT and Development Peak HGV's During Construction Year (2029)	LGV AADT Pre-Development	Peak Daily LGV Trips Generated by Development	Predicted LGV AADT and Development Peak LGV's During Construction Year (2029)
N72 (between Fermoy and Ballyhooley)	132	26	173	2937	19	3125
N20 (between Blarney and Mallow)	1055	26	1205	16522	19	17495
M8 (Between J15 and J16)	1871	26	2116	17416	19	18441
M8 Jn15 South Side On/Off-Slips	64	26	97	1873	19	2000
M8 Jnc15 Southbound Off-Slip	92	26	129	530	19	579
M8 Jnc15 Northbound On-Slip	75	26	110	557	19	608
R639	284	26	343	6622	19	7023

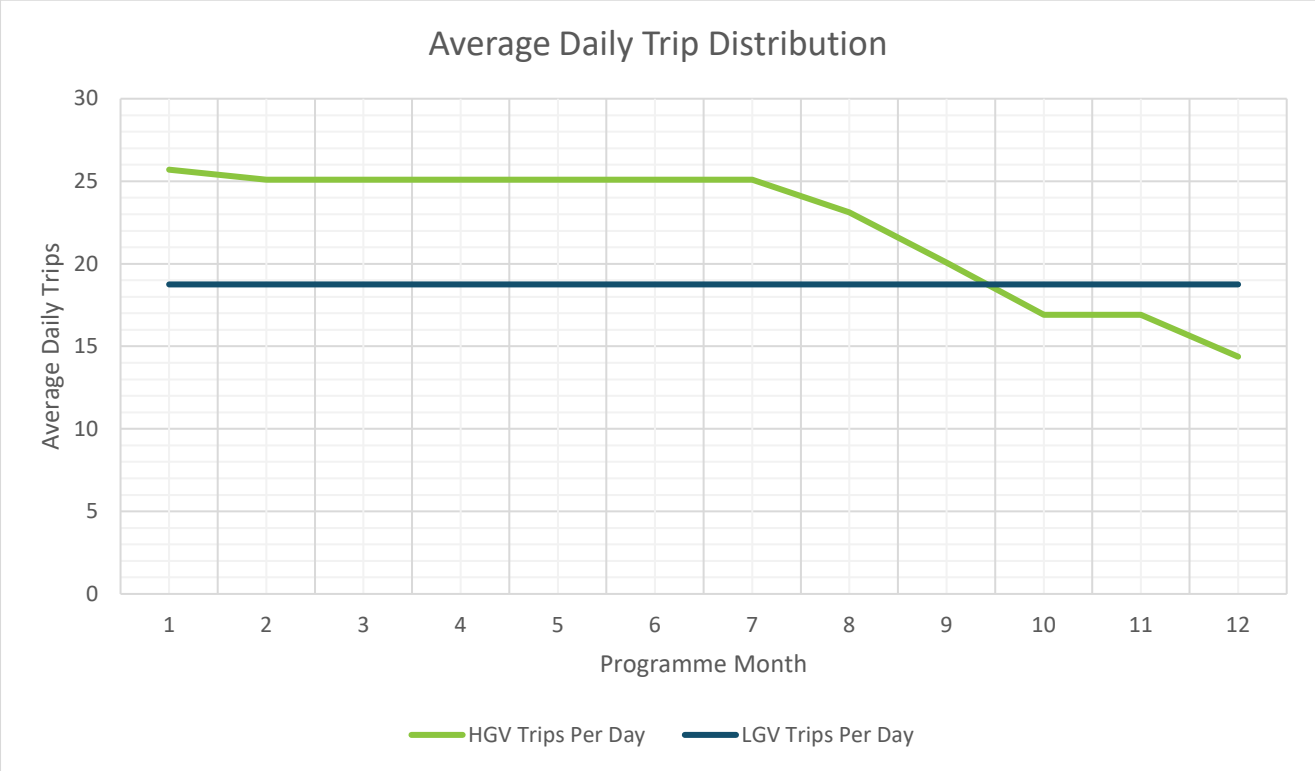

Plate 12-1: Estimated Average Daily Trip Distribution

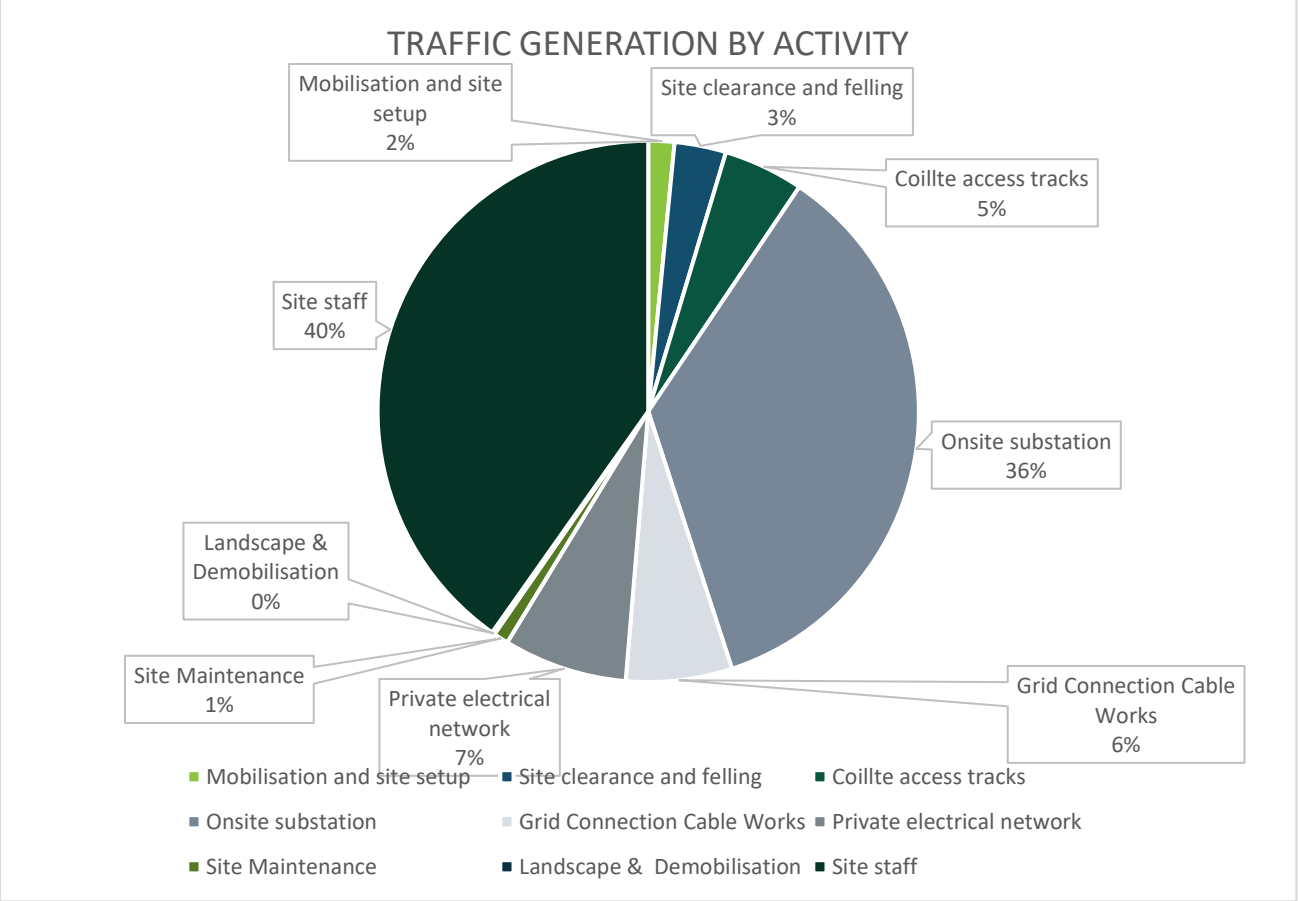

Plate 12-2: HGV Trips by Activity

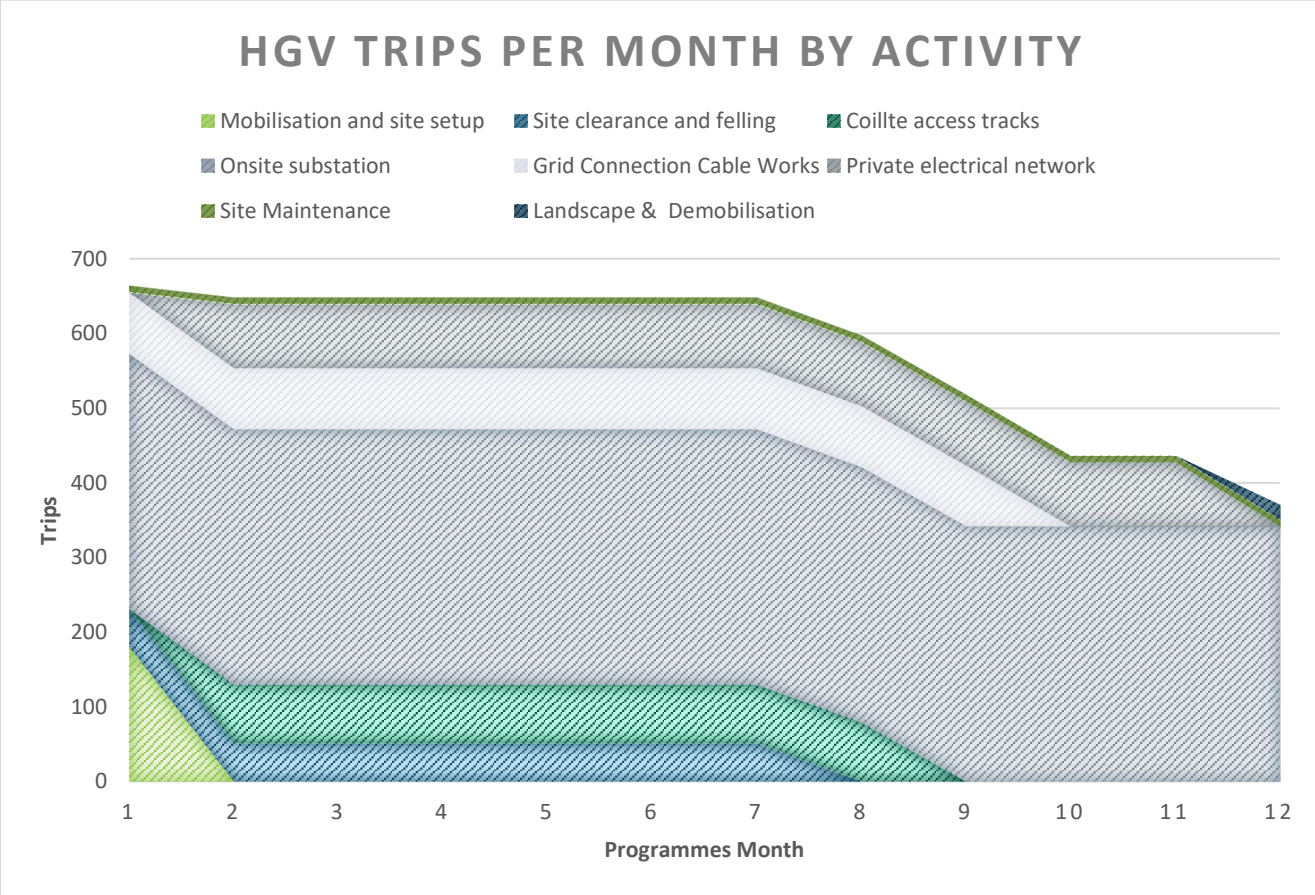

Plate 12-3: HGV Trips per month by Activity

For all traffic count data presented in the assessment, full yearly data available for 2024 was applied for the road network. These values are taken from TII Data (TII, 2024). A traffic growth factor is applied to the AADT data to arrive at a predicted AADT for the time of construction. For the purposes of this assessment the construction start date is set as 2029. The AADT based on automated traffic counter data provided in Table 12-4, Table 12-5, and Table 12-6 include the Cork Central growth rate factor based on this estimated construction start date. The projected yearly growth factors are taken from Table 3 of the TII document "Project Appraisal Guidelines Unit 5.5 Link-Based Traffic Growth Forecasting".

The predicted increase generally falls below the threshold for a significant effect in a traffic effect assessment, particularly on a regional road. While this increase is measurable, it is unlikely to lead to severe congestion or a complete breakdown of traffic flow.

Therefore, given the relatively low percentage increases in traffic volumes, the proposed construction traffic is not likely to result in a significant effect on the assessed roads. The calculations provided indicate a modest increase in traffic on the affected roads.

12.4.6.2 Operational Phase

The trip generation for the operational stage of the Proposed Development is anticipated to be minimal as the substation will be operated remotely as described in Chapter 2. Effects on the receiving environment associated with the operational phase of the Proposed Development are neutral in terms of quality, long-term in duration and imperceptible in significance.

For unforeseen or unplanned works, potential negative or adverse effects on the receiving environment will be temporary in duration and slight in significance without appropriate mitigation. They are not likely to generate significant effects.

12.4.6.3 Decommissioning Phase

Infrastructure associated with the grid connection will form part of the national transmission and distribution system and will be left in-situ. Therefore, no effects are envisaged upon decommissioning of the grid connection and no mitigation is required.

Negative or adverse effects on the receiving environment associated with decommissioning works of the 33 kV underground electrical and fibre optic cabling that connects each turbine are considered to be temporary in duration and slight in significance without appropriate mitigation.

12.4.6.4 Pre-mitigation Impact Assessment

Without appropriate mitigation measures, the construction works have the potential to lead to a negative effect on the local road network including:

- Delay and disruption to road users;
- Road safety issues, should the works not be carried out in line with good traffic management practices;
- Damage to roads without the correct reinstatement;
- Inappropriate parking of construction vehicles along the route of the works;
- Soiling of the public road leading to a general lack of cleanliness and poor skid resistance on roads.

Based on the above, negative or adverse effects on the receiving environment associated with the construction works of the Proposed Development are considered to be short-term in duration and slight to moderate in significance without appropriate mitigation.

Table 12-7: Summary of Pre-Mitigation Effects on the Receiving Environment

Phase	Duration	Quality	Significance
Construction	Temporary to short term	Negative/adverse	Slight to moderate
Operation	Long term	Neutral	Imperceptible
Decommissioning	Temporary	Negative/adverse	Slight

12.4.7 Mitigation Measures

12.4.7.1 Construction Phase

This section outlines the mitigation measures that will reduce, minimise or eliminate the potential effects created by the Proposed Development and outlined above.

The following mitigation measures are proposed to reduce the effects of the construction activity in relation to the construction phase of the Proposed Development:

- The road works associated with the grid connection cabling will be completed in line with the requirements of a road opening license as agreed with the local authority.
- In advance of the main grid connection works, an assessment will be carried out to define the precise alignment of the cable route within the corridor which has been assessed. This will include slit trenching with the aim of minimising the construction effects and avoiding existing services in the road.
- Access to local houses, farms and businesses will be maintained at all times during any road closures associated with the grid connection works. The details of this will be agreed with the roads authority in advance of the grid connection works commencing.
- Appropriate steps will be taken to prevent soil/dirt generated during the works from being transported on the public road. Road sweeping vehicles will be used, when necessary, to ensure that the public road network remains clean.
- Trenches on public roads, once backfilled, will be temporarily reinstated to the satisfaction of the roads authority.
- All roads will be reinstated expeditiously on completion of the construction works. Roads will be reinstated to their pre-works condition or better and to the satisfaction of the roads authority.
- All workers will receive a comprehensive site induction which will include a section on traffic management and clear guidance on the routes to be used/not used to access the site.
- A 24-hour emergency phone number will be maintained for the duration of the construction works and the number will be noted on temporary signage at each works area (for grid connection) and the site entrance for the Development site.
- All necessary temporary traffic management will be planned and executed in accordance with best practice, including Chapter 8 of the Traffic Signs Manual published by the Department of Transport.
- Adequate signage shall be installed on approach to the construction work advising of the presence of ‘construction traffic ahead’. The above signage shall be removed following completion of the construction phase.
- A detailed Traffic Management Plan (TMP) will be prepared prior to commencement of construction. This plan will address construction traffic, road safety signage, phasing of the deliveries, and emergency access (as shown in the TMP in the CEMP).
- The contractor will be responsible for the implementation of all agreements between the developer and Cork County Council with the objective that the transportation needs for the Proposed Development will have a minimal effect on the road network and local communities. All vehicles hauling materials to and from the Proposed Development shall only use agreed transport routes. Outline Traffic measures are set out in the accompanying outline Construction Environmental Management Plan
- All vehicles hauling materials to and from the Proposed Development shall only use agreed transport routes. The proposed accesses will be created allowing adequate visibility sightlines in accordance with TII Standards DN-GEO-03060: Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade separated, and compact grade separated junctions), May 2023, DN-GEO-03031: Rural Road Link Design, May 2023, and in accordance with the County Development Plan. Required sightlines will be maintained in both directions at the site entrance and existing hedgerows will be trimmed and removed as necessary.
- When necessary, banksmen will be stationed at the site entrances to ensure that construction traffic from the Proposed Development are managed accordingly so to minimise conflict with public traffic.

- All construction vehicles will be parked within the works area so as not to cause additional obstruction or inconvenience to road users or residents.
- Traffic movements for the construction of the development will be discussed with local community representatives and where necessary and off-peak deliveries will be accommodated where possible.
- If any damage to existing footpaths or cycle lanes occurs during the delivery of components, these sections will be replaced by the awarded civils contractor as per Guidelines for Managing Openings in Public Roads, Department of Transport, April 2017 (SD12 Footways: Concrete Permanent Reinstatement).

12.4.7.2 Operational Phase

The operational 110 kV Substation will be monitored remotely which will remove the need for site access on a frequent basis.

It is considered that no further mitigation measures are necessary for the operational stage of the development.

12.4.7.3 Decommissioning Phase

Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no effects are envisaged upon decommissioning of the main energy park development and no mitigation is required.

Although there will be vehicle movements associated with the removal of the 33 kV underground electrical and fibre optic cabling that connects each turbine during decommissioning, the number of vehicles will be significantly lower than that estimated for the construction phase.

Traffic and transportation effect mitigation for decommissioning of the Proposed Development will be the same as those identified for construction stage works and will be tailored to suit the existing environment conditions of the day and technology available.

12.4.8 Residual Effects

The construction of the Proposed Development will lead to additional construction traffic, including HGVs, during the construction phase. The construction programme will take place over approximately 12 months with the peak period for construction traffic occurring in month 1.

By adopting the mitigation measures proposed above and through the implementation of an adequately designed TMP, the potential negative effect from construction related traffic will have on the local road network will be 'temporary' to 'short-term' in duration, and 'slight' in significance.

As a result of the implementation of the stated mitigation measures in Section 12.4.7 to be adopted, it is not likely that traffic generated by the Proposed Development, alone or in combination with other traffic likely to occur on the various roads to be used, will have a significant effect on the environment or public health or safety and will ensure that residual effects are minimised throughout the duration of the proposed activities.

12.4.8.1 Construction Phase

Negative or adverse effects on the receiving environment associated with the construction of the Proposed Development are considered to be short-term in duration and slight in significance following mitigation. This phase of the Proposed Development is unlikely to generate significant effects on the environment.

12.4.8.2 Operational Phase

The trip generation for the development once operational is anticipated to be minimal.

Effects on the receiving environment associated with the operation phase of the Proposed Development are considered to be neutral in terms of quality, long-term in duration and imperceptible in significance.

For unforeseen or unplanned works such as emergency repair works described in Section 12.4.5, it is considered that negative or adverse effects on the receiving environment would be temporary in duration and not significant to slight following appropriate mitigation. This phase of the Proposed Development is unlikely to generate significant effects on the environment.

12.4.8.3 Decommissioning Phase

Negative or adverse effects on the receiving environment associated with decommissioning works of the 33 kV underground electrical and fibre optic cabling are considered to be temporary in duration and not significant following mitigation.

Infrastructure associated with the grid connection will form part of the national transmission network and will be left in-situ. Therefore, no effects are likely during decommissioning of the Proposed Development and no mitigation is required. This phase of the Proposed Development is unlikely to generate significant effects on the environment

A summary of the residual/post-mitigation effects on the receiving environment is presented in the below table.

Table 12-8: Summary of Residual Effects on the Receiving Environment

Phase	Duration	Quality	Significance
Construction	Temporary to short term	Negative/adverse	Slight
Operation	Long term	Neutral	Imperceptible
Decommissioning	Temporary	Negative/adverse	Not significant

12.4.9 Cumulative Effects

All known existing and proposed developments that could potentially generate cumulative effects with the Proposed Development in relation to traffic and transportation during construction, operation and decommissioning were identified and examined as part of this assessment. The development activities that were considered to have potential cumulative effects with the Proposed Development in terms of traffic and transportation effects are set out below. The following criteria were considered when assessing cumulative effects.

- Scale of Traffic Volumes: This refers to the volume of traffic generated by each development (e.g., small, medium, or large).
- Project Status: This considers the current phase of the development, which indicates the level of traffic effect. For example, in the case of wind farm development, the construction phase typically results in significantly higher traffic movements than the operational phase.
- Degree of Overlap or Interaction: This assesses whether the transport routes or other elements of the Proposed Development are shared with another development. A higher degree of interaction indicates a greater potential for cumulative effects.

The specific criteria applied to different project types are detailed in the Table below.

Table 12-9: Cumulative Traffic Effects Classification

Type	Scale	Phase	Interaction
Wind farm	Small (1-4 WTGs) Medium (5-8 WTGs) Large (9+ WTGs)	Construction Operation Decommissioning	TDR Transport routes Grid connection
Solar farm	Small (up to 5 MWp TIC) Medium (5 - 15 MWp TIC) Large (15+ MWp TIC)	Construction Operation Decommissioning	Transport routes Grid connection
Commercial/Industrial	Small - < 50 HGVs AADT Large - > 50 HGVs AADT	Construction Operation Decommissioning	Transport routes Grid connection [2]
Roads Project		Construction Operation Decommissioning	Transport routes Grid connection
Large Residential		Construction Operation Decommissioning	Transport routes Grid connection

Based on their proximity and scale, the only developments with the potential for significant cumulative effects on the proposed development are Coom Green Energy Park, Castlelyons Solar Farm and Clykeel Solar Farm.

The greatest potential for significant adverse effects is related to a scenario where the construction phases of these developments coincide. No significant effects are anticipated if the construction of one development coincides with the operational or decommissioning phases of another. Table 12-10 provides details of projects within the study area that have potential to cause adverse cumulative effects.

Please refer to Appendix 1.3 - List of Developments for Cumulative Assessment for a full list of all cumulative developments considered.

[2] The grid connection element refers to the Proposed Development's Grid Connection Route interacting with a transport route of a Commercial, Industrial, Road, or Large Residential Development.

Table 12-10: Cumulative Traffic Effects Classification

Development Name	Planning Reference	Distance and Direction from proposed site	Status
Coom Green Energy Park	308885 (ACP)	~Adjacent to Proposed Development	Granted (9/11/2023)
Castlelyons Solar Farm	323301 (ACP) 245211 (CCC)	~Adjacent to Proposed Development	ABP - due to be decided by (11/12/2025)
Clykeel Solar Farm	205898 (CCC)	~2km south of the Proposed Development	Conditional (24/05/2021)
Rahanisky Solar Farm	318852 (ACP) 235486 (CCC)	~12.1km south of the Proposed Development	ABP - Conditional (01/08/2024)
Ballynahina Solar Farm	234245 (CCC)	~11.3km south of the Proposed Development	Conditional (20/12/2023)
Bottlehill Landfill	-	~Adjacent to Proposed Development	Existing
M20 Motorway Project	-	~7km east of the Proposed Development	Planning application not lodged at time of writing
M28 Motorway Project	HA04.HA0053 (ACP)	~20km south of the Proposed Development	Granted 29/06/2018

12.4.9.1 Coom Green Energy Park

The construction period for the CGEP Development will take up to 24 months. During this time, it is estimated that the development will receive a daily average of 44 HGVs. An average workforce of 50 persons is anticipated, increasing to 75 persons during peak periods. This is estimated to give rise to an increase of LGV traffic of 68 trips per working day and rising to 100 during peak construction periods.

The 2020 CGEP EIAR considered the 110 kV GCR for which planning permission is now being sought. Additionally, the 2020 CGEP assessed a 110 kV substation at Lackendarragh with similar footprint to that of the Proposed Development, and a 110 kV interconnector cable route between western and eastern wind farm arrays which has been replaced by the proposed 33 kV CNR.

The works associated with the Proposed Development will be carried out over a 12-month period and fall within the overall CGEP construction programme as assessed in the 2020 EIAR and will not result in additional overall programme duration for the CGEP construction programme.

The below table illustrates the cumulative considerations as a result of the Proposed Development:

Table 12-11: Cumulative Impact Considerations of the Proposed Development and CGEP

Element of the Proposed Development	Description of Changes/Impacts of Proposed Development on CGEP Development Assessed in 2020 EIAR
Interconnector connector cabling between the western and eastern arrays.	15.8 km of 33kV triple circuit cabling in place of 7.7 km of 110 kV cable will result in additional materials in the form of ducting, trench backfill. Reduction in amount of cable trenching in public roads from 5.8 km to 1.1 km.
110 kV grid connection cabling between the onsite substation at Lackendarragh North and Barrymore Substation	No change in route alignment or distances. Slight change in positioning of launch and receptor pits associated with the M8 HDD crossing. Minor changes to number and locations of joint bays following up to date electrical design studies.
110 kV substation	Reduction in overall 110 kV substation footprint from 21,827 m2 to 16,992 m2. Minor reduction in HGVs associated with construction of the proposed substation compound.

In addition to the above infrastructure considerations arising from the Proposed Development, an additional 2.4 ha of forestry felling will be carried out as a result of the Proposed Development when compared to that assessed in the 2020 EIAR.

The 2020 CGEP EIAR described the following post-mitigation environmental effects on the existing transportation network.

Table 12-12: CGEP Summary of Effects on Receiving Environment

Phase	Duration	Quality	Significance
Construction	Temporary to short term	Negative/adverse	Not significant to slight
Operation	Long term	Neutral	Imperceptible
Decommissioning	Temporary	Negative/adverse	Not significant

The Proposed Development shall not result in significant adverse effects on the receiving environment when considered cumulatively with the consented CGEP Development. It is not considered that the Proposed Development will result in a change in the duration, quality or significance of effects on the receiving environment described in Table 12-12.

12.4.9.2 Castlelyons Solar Farm

Castlelyons Solar Farm is located adjacent to the Proposed Development. It is located within the townlands of Corrin, Kill Saint Anne North, Clykeel North, Ballinvarrig East, Ballinvarrig West, Deerpark, Knockaduff, Kill Saint Anne South, Ballyarra, Mohera, Spuree, Castlelyons, Fermoy, Co. Cork.

The development contains solar photovoltaic panels on ground mounted frames within a site are of 41.72ha, 4 single storey transformer stations, 4 single storey spare parts storage containers, 1 single storey MV electrical kiosk, a 38kV substation compound with 1 single storey substation building, underground electrical ducting, cabling and joint bays within the development site and within the L-1520-11, L1520-39, L-1518-0, L5789-0 and L-1517-0 public roads to connect the solar farm field parcels, a new entrance off the L-5720-11, a new entrance off the L-5170-0, upgrading of an existing agricultural entrance off the L-1520-11, internal access tracks, security fencing, CCTV, landscaping and all associated development site works

It is understood from the submitted planning application documents that the construction period for the Castlelyons Solar Farm will take up to 56-68 weeks. During this time, it is estimated that the development will receive a daily average of 16 HGVs. An average workforce of 125 persons is anticipated, increasing to 175 persons during peak periods.

There is a short overlap of the Castlelyons Solar Farm cable route and delivery route with the Proposed Development on the L1517. The Castlelyons Solar Farm has a parcel entrance located on the L1517 to the immediate north of Barrymore Substation. The Castlelyons Solar Farm delivery route and the cable route travels through this entrance onto the L1517 before heading southeast, whereas the Proposed Development runs northwest from Barrymore Substation. This results in an overlap between the two developments of less than 100m.

Therefore, it is considered that a temporary material cumulative effect will be created as a result of this development during the construction, operation or decommissioning phases of the Proposed Development. To mitigate any potential traffic disruption due to this, the traffic management plan will be agreed with local authority if construction phases for the Castlelyons Solar Farm and the Proposed Development overlap to ensure disruption to the local road network is minimised. This can include coordination on timing of specific works associated with the Proposed Developments.

12.4.9.3 Clykeel Solar Farm

The Clykeel Solar Farm development is located approximately 2km south (straight line distance) of the Proposed Development. It is located within the townland of Clykeel North, Rathcormac, Fermoy, Co. Cork. The Clykeel Solar Farm development consists of up to 27,690 of photovoltaic panels on ground mounted frames within a site area of approximately 15.18 hectares, 2 no. single storey inverter/transformer stations, 1 no. single storey delivery station, security fencing, CCTV, and all associated ancillary development works.

It is understood from the submitted planning application documents that the construction period for the Clykeel Solar Farm will take approximately 12 weeks. During this time, it is estimated that the development will receive a total of 118 HGVs with peak volumes of 20 HGVs per week during weeks 1-2. An average workforce of 42 persons is anticipated.

The Clykeel Solar Farm shares a portion of the delivery route with the Proposed Development from Ringaskiddy Port onto the M8. However, the Clykeel Solar Farm delivery route exits the M8 at Junction 16 with the Proposed Development's delivery route exiting at Junction 14. No haulage or delivery route is outlined in the submitted documents for Clykeel Solar Farm. The Clykeel Solar Farm will also connect to the grid at Barrymore substation. However, the grid connection for Clykeel Solar Farm will run south from Barrymore Substation.

Therefore, it is considered that a temporary material cumulative effect will be created as a result of this development during the construction, operation or decommissioning phases of the Proposed Development. To mitigate any potential traffic disruption due to this, the traffic management plan will be agreed with local authority if construction phases for the Castlelyons Solar Farm and the Proposed Development overlap to ensure disruption to the local road network is minimised. This can include coordination on timing of specific works associated with the Proposed Developments.

12.4.9.4 Rahanisky Solar Farm

The Rahanisky Solar Farm development is located approximately 12.1km south (straight line distance) of the Proposed Development. It is located within the townlands of Rahanisky, Killeendaniel, Monard, Co. Cork. The Rahanisky Solar Farm development consists of a Solar Farm and underground grid connection within an overall site area of 61.08 hectares. The solar farm consists of 330,200 square meters of solar photovoltaic panels on ground mounted steel frames; on-site electrical substation; electrical skids (containing inverters, transformers and switchgear); underground power and communication cables and ducts; boundary security fencing; new internal access tracks and associated drainage infrastructure; new site entrance to the L6965 local road; 10 no. CCTV/lighting posts and all associated site services and works. The development also includes underground grid connection, which is to be installed primarily within the L6965, L2951 and L2963 public roads, this includes the installation of 3 no. underground medium voltage electrical cables, 1 no. fibre communications cable, 2 no. joint bays and associated infrastructure to allow communications and connection between the proposed 38kV on-site substation and the Kilbarry 110 k Substation, Blackpool, Cork City. The total length of the cable is c.4,449m.

It is understood from the submitted planning application documents that the construction period will take approximately 12 months. During this time, it is estimated that the development will receive a daily average of 14 HGVs with a peak of 24. It is also estimated that the development will receive a daily average 21 LGV's with a peak of 24 in months 9-11. It is predicted that the peak times for HGV deliveries per day will be month 1.

The Rahanisky Solar Farm does not share a haul route or grid connection cable route with the Proposed Development. The Rahanisky Solar Farm abnormal loads delivery route will utilise the N20 to get to site. Therefore, it is considered that no material cumulative effect will be created as a result of this development during the construction, operation or decommissioning phases of the Proposed Development.

12.4.9.5 Ballynahina Solar Farm

The Ballynahina Solar Farm development is located approximately 11.3km south (straight line distance) of the Proposed Development. It is located within the townlands of Killavarrig, Rahanisky and Ballynahina, Whitechurch, Co. Cork. The Ballynahina Solar Farm development consists of approximately 71,742 photovoltaic panels on ground mounted frames within a site area of 64.55ha, 9 no. single storey inverter/transformer stations, 1 no. single storey spare parts storage container, 1 no. 38kV substation compound with single storey substation building, 1 no. clear span bridge, upgrading of existing agricultural entrances, internal access tracks, security fencing, CCTV, landscaping and all associated development site works.

It is understood from the submitted planning application documents that the construction period for the Ballynahina Solar Farm will take approximately 15-18 months. The trip generation values are not stated in the submitted documents, but it is stated that the estimated level of traffic generated is not considered to exceed local road network capacity or to give rise to local traffic obstruction either at the site entrance or on approach roads. Transportation routes are also not stated. Ballynahina Solar Farm's grid route does not overlap with the Proposed Development.

Considering Ballynahina Solar Farm's distance from the Proposed Development, it is considered that no material cumulative effect will be created as a result of this development during the construction, operation or decommissioning phases of the Proposed Development.

12.4.9.6 Bottlehill Landfill

The Bottlehill Landfill facility has been constructed; it is currently not operational. At the time of writing it is unknown when the landfill will begin receiving waste. Should landfill operations commence during the operational phase of the Proposed Development, the cumulative effect would be imperceptible due to the very small amounts of operational phase traffic associated with the Proposed Development.

According to the Bottlehill Landfill Environmental Impact Statement (EIS), prepared by Tobin Consulting Engineers on behalf of Cork County Council (May 2003), the Bottlehill landfill facility will generate 9.5 HGV waste trips per hour in the first year of operation rising to 14 per hour in the last year of operation. Assuming an average figure of 11.75 HGV trips per hour, this results in an average daily trip rate of 94 during operation of the facility. However, trips to the Bottlehill Landfill facility are expected to utilise the N20 to the east, thus, avoiding the Proposed Development

It is not expected that landfill operations would conflict with turbine deliveries or construction of the grid connection route as there would be insufficient interaction to create a cumulative effect.

Should the construction phase coincide with the commencement of operation of the landfill, measures contained within the construction stage CEMP and TMP will ensure no conflicts occur between the two activities.

12.4.9.7 M20 Motorway Project

The M20 motorway project from Limerick to Cork is currently at feasibility stage. In the highly unlikely scenario that this project commences during the construction phase of Proposed Development, there is the potential for a direct cumulative negative effect on the receiving environment in the form of increased construction traffic and disruption, especially on local roads along the Proposed Development during construction of the section of motorway near the turn off for Bottlehill Landfill. It should be noted that expected effect associated with the M20 development would have a considerably greater adverse effect on the existing road network than CGEP and would form vast majority of the overall cumulative effect.

Negative or adverse effects on the receiving environment associated with these activities are considered to be temporary in duration and significant without adequate mitigation.

Measures contained within the construction stage TMP for the Proposed Development will ensure traffic management measures for both projects do not conflict. A TMP has been prepared as part of this EIAR and can be found in the CEMP.

12.4.9.8 M28 Motorway Project

The M28 Cork to Ringaskiddy Project is the upgrade of approximately 12.5km of the N28 National Primary Route from the N40 South Ring Road, at Bloomfield Interchange, to Ringaskiddy, Co. Cork. Transport Infrastructure Ireland is the proponent of this project, and the project has been included in the government's Infrastructure and Capital Investment Plan 2016 – 2021.

Construction is expected to take between 30 and 36 months with a predicted completion date in 2028. Traffic effects associated with the M28 development would have a considerably greater adverse effect on the existing road network in comparison to the Proposed Development.

This project is over 20km from the Proposed Development. In the scenario that this project commences during oversized delivery for the Proposed Development, the proposed roads scheme may result in a cumulative effect due to its interaction with the proposed Oversized delivery route between Ringaskiddy and Dunkettle where the scheme terminates.

Negative or adverse effects on the receiving environment associated with these activities coinciding is considered to be temporary in duration and not significant.

The measures contained within the construction stage TMP for the Proposed Development will ensure traffic management measures for both projects do not conflict. A TMP has been prepared as part of this EIAR and can be found in the CEMP.

12.4.10 Conclusion

There are no likely significant effects on the receiving environment as a result of the construction, operation and decommissioning of the Proposed Development.

The Proposed Development is likely to result in a slight to moderate short-term negative effect on the existing road network during the construction phase if adequate mitigation measures are not implemented.

Following implementation of mitigation measures outlined herein, residual effects during the construction phase will be reduced and are not expected to exceed ‘slight to moderate’ in significance.

Effects during operation and decommissioning are considered imperceptible to not significant.

There are no significant cumulative effects expected on the receiving environment as a result of other existing or Proposed Development.

The mitigation measures identified in this Chapter will be adopted and implemented by the Contractor and incorporated into the construction stage CEMP and TMP for the Proposed Development.

12.5 Telecommunication

12.5.1 Methodology

This chapter of the EIAR assessment describes the methodology used in assessing the potential effects from the Proposed Development, and, as such, has considered Telecommunication as a standalone section within this EIAR chapter.

This section presents the methodology used in assessing the potential effect from the Proposed Development on local telecommunication services. The following sources of information were considered in this assessment:

- The design layout of the proposed development;
- Published literature as described below;
- A desk-based assessment of the existing telecommunications network.

Telecommunication stakeholders (as well as broadcasting and utility stakeholders) that could potentially be affected by the Proposed Development were identified through field and desktop surveys, in addition to consultation with national operators. Initially, a desktop examination of resources and infrastructure was conducted in the area of the Proposed Development. This desktop study provided initial constraints for analysis and identified potential stakeholders for consultation.

12.5.2 Limitations

No limitations were encountered in the assessment of the potential effect on telecommunications from the Proposed Development.

12.5.3 Baseline Environment

Baseline studies were carried out to establish the location of existing telecommunication links relative to the Proposed Development. GIS was used to map and process available in-house telecommunications data.

This allowed identification of telecommunication services in close proximity to the Proposed Development to be identified for further assessment.

Following desktop analysis, the existence of a telecom crossing has been identified and confirmed following consultation with the various TOs. In many cases, impacts on telecommunications can be sufficiently characterised and mitigated by implementing a separation distance. The separation distance required depends on the specific parameters of each telecommunication service and identified for further assessment.

12.5.4 Assessment of Likely Significant Effects

12.5.4.1 Do- Nothing Scenario

If the Proposed Development were not to proceed, it is unlikely there would be changes to the existing telecommunication operations in the area.

12.5.4.2 Construction Phase

The Proposed Development will be constructed underground along public and private roads. The works have potential to effect underground telecommunication services, with one underground telecom crossing transversing the route (https://cei.openeir.ie/emaps/index.html#/map/52.111640,-8.303526,17z). It is unlikely that there will be a negative effect on telecommunication infrastructure along the Proposed Development.

However, in advance of the construction phase, further consultation will be sought with service providers as installation of such services in the public road may occur prior to the construction of the Proposed Development. Cable detection tools, a ground penetrating radar and slit trenches will be used, as appropriate, to verify the exact locations of existing services (if any).

The final locations of the proposed cable routes in the public roads and in the verge along the public road will be within the area described and assessed in this EIAR and will minimise conflicts with other services. A minimum separation distance of 300mm will be maintained with existing services. New cable ducts will be laid below existing services, if encountered.

12.5.4.3 Operational Phase

As the Proposed 110kV GCR and 33kV CNR will be operating underground, there are no operational related effects on telecommunication interests in the area.

12.5.4.4 Decommissioning Phase

The Proposed 110kV GCR and onsite substation will be left in situ. The 33kV CNR that connects each turbine will be removed from the cable ducting. There are no decommissioning related effects on telecommunications and broadcasting interests in the area.

12.5.5 Mitigation Measures

The Proposed 110kV GCR and onsite substation will be left in situ. The 33kV CNR that connects each turbine will be removed from the cable ducting. There are no telecommunications related mitigation measures proposed.

12.5.6 Cumulative Effects

There are no cumulative effects for telecommunications, electromagnetic interference and broadcasting interests related to the construction, operational or decommissioning phases in the area.

12.5.7 Residual Effects

Following the implementation of mitigation measures following consultation with relevant stakeholders, no significant residual effects are expected on telecommunications as a result of the Proposed Development.

12.6 Conclusion

It is considered unlikely that the Proposed Development will interfere with, or disrupt, any infrastructure associated with Material Assets and Telecommunications during construction, operation and decommissioning. Any potential effects on Material Assets and Telecommunication services during the operational phase are considered to be negligible, with a positive contribution to national electricity networks and infrastructure through the leaving in-situ of the substation and electrical infrastructure once the Proposed Development is decommissioned. Therefore, it is considered unlikely that the Proposed Development will interfere with, or disrupt, Material Assets and Telecommunication services during construction, operation and decommissioning.

Regarding Traffic and Transportation, the Proposed Development is likely to result in a slight to moderate short-term negative effect on the existing road network during the construction phase if adequate mitigation measures are not implemented. Following implementation of mitigation measures outlined herein, residual effects during the construction phase will be reduced and are not expected to exceed 'slight to moderate' in significance. Effects during operation and decommissioning are considered imperceptible to not significant. There are no significant cumulative effects expected on the receiving environment as a result of other existing or Proposed Development.

As outlined throughout this EIAR, the Proposed Development includes pro-active design measures and mitigations to ensure that construction activities do not affect existing infrastructure, and all necessary adjustments to infrastructure will be managed through careful planning in conjunction with the relevant authorities. The mitigation measures identified in this Chapter will be adopted and implemented by the Contractor and incorporated into the construction stage CEMP for the Proposed Development.

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