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MetroLink 110kV Underground Cables

Volume 1: Environmental Impact Assessment
Report
Non-Technical Summary

June 2023

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MetroLink 110kV Underground Cables

Volume 1: Environmental Impact Assessment Report Non-Technical Summary

June 2023

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1 Non-Technical Summary

1.1 Introduction

The MetroLink project (The Project) is a proposed high-capacity, high-frequency, modern and efficient metro railway between Estuary Station and the Park and Ride Facility, north of Swords via Dublin Airport to Charlemont Station which lies south of Dublin City Centre. The Project will be approximately 27km in length. The Railway Order (RO) application for MetroLink was submitted to An Bord Pleanála on 30th September 2022, case reference: NA29N.314724. The National Roads Authority (operating as Transport Infrastructure Ireland) made the application under Section 37 of the Transport (Railway Infrastructure) Act 2021, (as amended and substituted). This case was due to be decided by 22 May 2023.

The RO application (NA29N.314724) for the MetroLink project included the following principal elements::

- Tunnels
- Cut Sections
- Tunnel Portals
- Stations
- Intervention shaft
- Intervention tunnels
- Park and Ride facility
- Broadmeadow and Ward River Viaduct
- Proposed Grid Connections
- Dardistown Depot
- Operations Control Centre
- M50 Viaduct

The proposed development, the subject of the associated EIAR, is for the underground grid connections between Newbury - Ballystruan, Ballystruan - Forest Little and between Forest Little - Belcamp substations, which will supply the power for the project. The RO application has assessed the proposed grid connections and two proposed substations (Ballystruan and Forest Little) as part of the RO EIAR and this Section 182A EIAR assesses the proposed grid connections cumulatively with the MetroLink rail project. The Environmental Impact Assessment Report (EIAR) has been prepared to accompany an application for statutory approval to An Bord Pleanála (ABP).

1.1.1 Project Description

The proposed development comprises electricity transmission infrastructure to facilitate the MetroLink project and consists of the following principal elements:

- Installation of approximately 5km of 110kV UGC between the existing Newbury 110kV substation in the townland of Shrubs, County Dublin and the proposed 110kV substation at Ballystruan in the townland of Ballymun, County Dublin.
- Installation of approximately 10km of 110kV UGC between the proposed 110kV substation at Ballystruan in the townland of Ballymun, County Dublin and the proposed 110kV substation at Forest Little in the townland of Cloghran, County Dublin.

- Installation of 110kV / 220kV UGC between the proposed 110kV substation at Forest Little in the townland of Cloghran, County Dublin and the existing 220kV substation at Belcamp in the townland of Belcamp, County Dublin. This route will ultimately be constructed to 220kV standards to allow for future 220kV operation but will operate at 110kV initially. Two options have been considered in this EIAR and the accompanying NIS for this route but only one of the two options will be installed:
 - Option 1 is approximately 9km in length and follows a route along Baskin Lane/Malahide Road;
 - Option 2 is approximately 4km in length and follows a route along Stockhole Lane.

The proposed cable routes will incorporate the following:

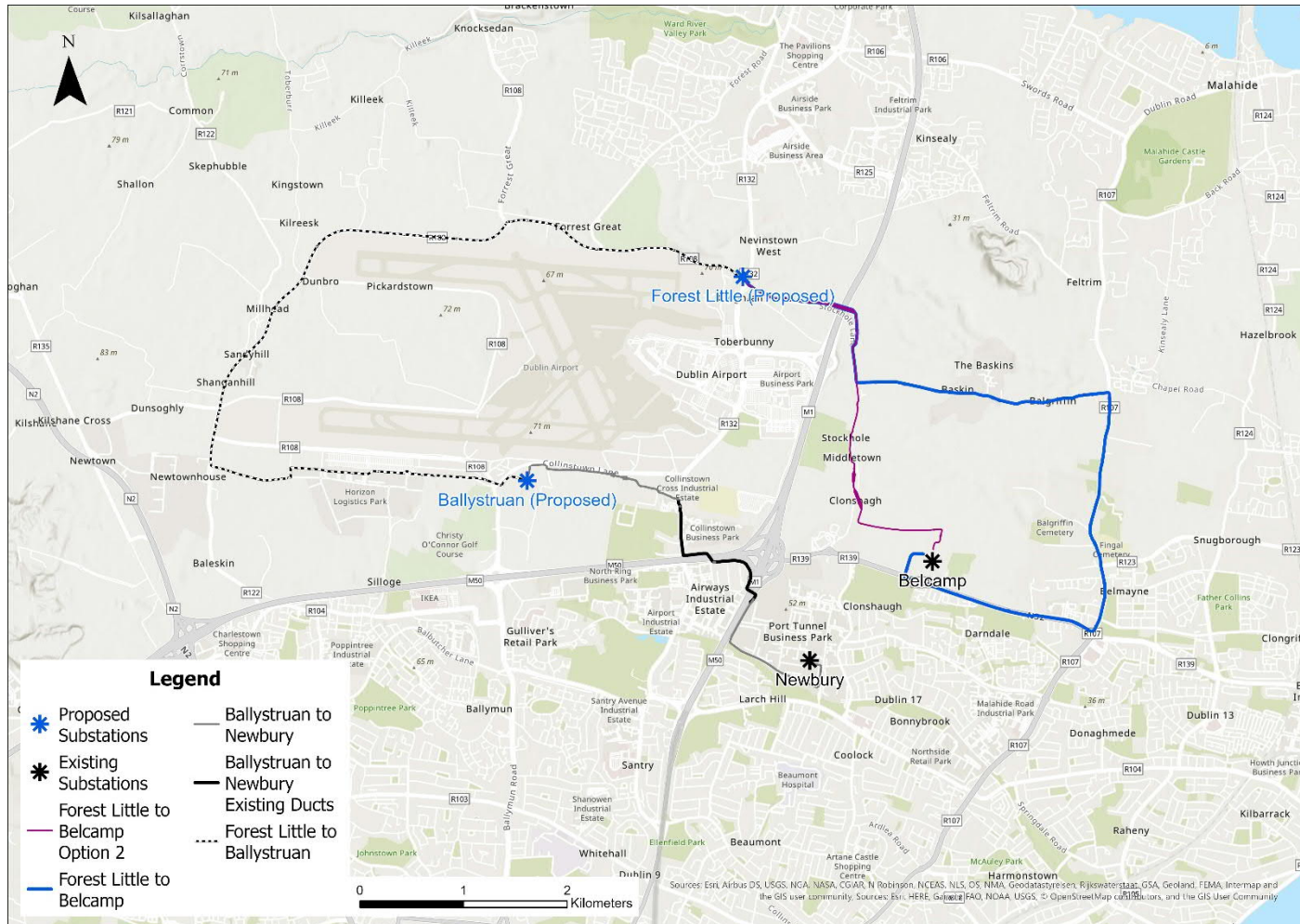
- Joint bays (to accommodate both 220kV and 110kV cables), communication chambers and link boxes
- Temporary passing bays
- Water and utility crossings, including Horizontal Directional Drilling (HDD)
- Temporary construction compounds including associated site works and ancillary staff facilities and parking.
- All associated and ancillary above and below ground site development works, including works comprising or relating to permanent and temporary construction and roadworks and excavation including HDD and vegetation clearance.

1.1.2 Site Location

The proposed development is located to the north of Dublin City and is proposed to stretch from Forest Little to Belcamp, Newbury to Ballystruan and Ballystruan to Forest Little. Dublin Airport is situated at the centre of the study area.

The main land use to the west of the site is the airport, the area has mixed landcover, ranging from farmed open fields to built-up industrial and commercial with clusters of residential. The area is predominantly low-lying, with elevation decreasing slightly toward the south and east.

Figure 1.1: Proposed Underground Cable Routes



Source: Mott MacDonald

1.2 Methodology

The EIAR has been prepared in accordance with the EIA Directive and Environmental Protection Agency's (EPA) Guidelines on the information to be contained in Environmental Impact Assessment Reports 2022 (hereafter referred to as the "EPA Guidelines 2022").

For each assessment, a precautionary approach has been applied to ensure that the worst-case scenario has been considered in the assessment. This approach provides a resilient method where it may not be possible to identify the exact design parameters before final design stage. It accommodates flexibility in design and construction while ensuring that the greatest environmental impacts and maximum extents are assessed in the EIAR. Detailed methodologies are presented in each chapter of the EIAR. The amended EIA Directive requires that the EIAR provides: "A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge".

Article 3(1) of the EIA Directive lists environmental factors to be assessed for direct and indirect effects of the project. The chapter headings of the EIAR are based on this list. The EIAR also complies with Article 5 of the EIA Directive which lists the components of an EIAR. The description of likely significant effects is prepared in accordance with Annex IV of the EIA Directive. The EIAR requirements for consultation, as defined in Article 6 of the EIA Directive, were also complied with.

The receiving environment for each environmental factor describes the existing state of environmental characteristics and conditions. This includes sensitivity and significance of those environmental factors that are likely to be significantly affected by the proposed development. As per the EIA Directive, the do-nothing effects are also considered i.e., state of future receiving environment in the absence of proposed development.

The effects are described in accordance with the EPA Guidelines 2022. The significance of a potential impacts is dependent on the sensitivity of the receiving environment and the character of the predicted impact, as shown in the EPA Guidelines 2022. Professional judgement plays a key role where magnitude or significance of impacts cannot be quantified with certainty. Where significant adverse impacts are likely, mitigation measures are proposed to offset these impacts. The assessment of impacts is conducted for construction, operational, maintenance and decommissioning phase.

Mitigation is proposed as per the EPA Guidelines 2022 and is divided into four strategies: avoidance, prevention, reduction, and offsetting. Residual impacts, that remain once mitigation has been implemented, are also identified and discussed in each chapter, where applicable.

A key aspect of the EIAR is assessment of cumulative effects. In each chapter, the nature and scale of other developments in the vicinity of the proposed development have been evaluated to identify potential for significant cumulative effects.

There is no potential for transboundary effects as all proposed works are within Ireland.

The EIAR also includes assessment of interaction of effects that may arise due to the effects of the proposed development on various environmental factors.

1.3 Need for the Proposed Development

The MetroLink is a proposed high-capacity, high-frequency rail line running from Swords to Charlemont, linking various transportation hubs, such as Dublin Airport, Irish Rail, DART, Dublin

Bus and Luas services, thus creating fully integrated public transport in the Greater Dublin Area. MetroLink will connect various key destinations including Ballymun, the Mater Hospital, the Rotunda Hospital, Dublin City University and Trinity College Dublin, with much of the 19-kilometre route will run underground. The MetroLink power supply will be provided by the Electricity Supply Board (ESB) through the construction of new electricity circuits, the proposed development.

The proposed MetroLink creates integration and connectivity between other transport hubs, such as Dublin Airport, Iarnród Éireann and DART. The cable installation will provide a suitable and sufficient power source to facilitate MetroLink project.

The cables will be installed along a mixture of public road and private land. The two new substations are to be named Forest Little 110 kV Station located at Metrolink North Portal in Cloghran and Ballystruan 110 kV Station located at Metrolink Dardistown in Ballystruan.

This project will see the construction of three new 110 kV circuits. One of which, Forest Little – Belcamp will initially operate at 110 kV but is to be built to 220 kV standards for future operation. A fourth spare duct will also be constructed from Forest Little to Belcamp to 110 kV standards.

- Newbury - Ballystruan 110 kV
- Ballystruan - Forest Little 110 kV
- Forest Little - Belcamp 110 kV (to be built to 220 kV standards) Options 1 and 2

The proposed development will provide the power required for the MetroLink rail line.

1.4 Alternatives Considered

As part an initial feasibility assessment the following were considered:

- Criteria when Selecting a Cable Route:
 - Preference for route selection within the public domain e.g. roadways, public parks, avoiding private property where possible.
 - Route corridors should maintain required clearances from existing structures.
 - Route corridors endeavour to avoid unnecessary crossings of major roads, railways and water ways.
 - The routes selected should minimise traffic disruption during construction where possible.
 - The proposed cable route corridors should provide suitable locations for joint chambers.
- Constructability of the cable route corridor.
 - The cable route corridor should be selected to avoid lakes and water features, where possible.
 - Cable routes should be selected that minimise the overall length in order to reduce costs.
 - The cable route corridors should be selected to minimise conflict with future development.
 - Minimum design clearances between existing underground high voltage cables and transmission gas pipelines must be maintained.
 - Environmental constraints including designated areas such as NHAs, SPAs and areas of archaeological importance should be avoided wherever possible.
 - Crossing points under SACs (Special Areas of Conservation) should be avoided or minimised where no other viable alternative exists.
 - Access for future maintenance is critical when identifying a suitable cable route corridor.

Constraints considered within the study area, led to the proposed

- Existing Utilities

- Private Property
- Bridges and Water Crossings
- Traffic and Roads
- Ecology and Archaeology
- Proposed and Existing HV Cables
- Dublin Airport

Consideration of the route selection, constructability and constraints steered the designers towards preferred options for the 110 kV / 220 kV Forest Little to Belcamp, 110 kV Newbury to Ballystruan; and the 110 kV Ballystruan to Forest Little route, details of which are presented within Chapter 4 Alternatives of this EIAR. As the design process was progressed the route optimisation and final modifications led to the proposed route as presented within Chapter 6 Description of the proposed development.

1.5 Stakeholder Engagement

Stakeholder engagement has been carried out in preparation of the EIAR in accordance with Article 6 of the EIA Directive. The consultation aims to inform consultees of the proposed development and provides them an opportunity to submit feedback.

This included consultation with prescribed bodies and stakeholders to inform them of the proposed works associated with the proposed development and to identify potential concerns and comments on the contents of the EIAR, and to incorporate recommendations on the proposed development. Letters were issued to statutory consultees and several meetings were held:

- ESB undertook meeting with the Uisce Eireann Greater Dublin Drainage team on 27 January 2022, discussing the routes for both projects and the depth of the excavations that were needed for both projects. Continued consultation between both teams was agreed on the development of both projects.
- ESB and Mott MacDonald held a meeting with Inland Fisheries 23 June 2022. Crossing of streams was discussed and possible crossing methods under streams.
- Written feedback was received from DAA (Dublin Airport Authority) 29 July 2022, an initial meeting between the Mott MacDonald Transport Team and DAA was held on 8 December 2022 with ongoing consultation between ESB and DAA and a subsequent meeting between ESB and DAA on 25 January 2023.
- A consultation meeting was held between Mott MacDonald and Fingal County Council 10 November 2022 and 12 December 2022 where discussions were held on the proposed development and potential traffic issues.
- A consultation meeting was held between Mott MacDonald and Dublin City Council 16 November 2022 where discussions were held on the proposed development and potential traffic issues.

1.6 Description of the Proposed Development

The proposed development comprises electricity transmission infrastructure to facilitate the MetroLink project and consists of the following principal elements:

- Installation of approximately 5km of 110kV UGC between the existing Newbury 110kV substation in the townland of Shrubs, County Dublin and the proposed 110kV substation at Ballystruan in the townland of Ballymun, County Dublin (ca. 5km with ca. 1.65km within existing ducts).

- Installation of approximately 10km of 110kV UGC between the proposed 110kV substation at Ballystruan in the townland of Ballymun, County Dublin and the proposed 110kV substation at Forest Little in the townland of Cloghran, County Dublin
- Installation of 110kV / 220kV UGC between the proposed 110kV substation at Forest Little in the townland of Cloghran, County Dublin and the existing 220kV substation at Belcamp in the townland of Belcamp, County Dublin. This route will ultimately be constructed to 220kV standards to allow for future 220kV operation but will operate at 110kV initially. Two options have been considered in this EIAR and the accompanying NIS for this route but only one of the two options will be installed:
 - Option 1 is approximately 9km in length and follows a route along Baskin Lane/Malahide Road;
 - Option 2 is approximately 4km in length and follows a route along Stockhole Lane.

The proposed cable routes will incorporate the following:

- Joint bays (to accommodate both 220kV and 110kV cables), communication chambers and link boxes
- Temporary passing bays
- Water and utility crossings, including Horizontal Directional Drilling (HDD)
- Temporary construction compounds including associated site works and ancillary staff facilities and parking.
- All associated and ancillary above and below ground site development works, including works comprising or relating to permanent and temporary construction and roadworks and excavation including HDD and vegetation clearance.

The supplied 110kV bulk feeds from the utility company will be stepped down at substation facilities to 20kV for distribution to MetroLink Medium Voltage (MV) traction and auxiliary substations along the line. For resilience each MetroLink HV substation is required to be supplied with two underground 110kV circuits, looping into the substation from two diverse routes.

1.6.1.1 Proposed construction programme:

The following are indicative timelines for construction of the underground cables:

- Newbury to Ballystruan - Subject to the grant of statutory approval, it is anticipated that the construction phase will commence in Q2 of 2030 and the construction works (civil) will be complete in Q1 of 2031.
- Ballystruan to Forest Little - Subject to the grant of statutory approval, it is anticipated that the construction phase (civil works only) will commence in Q3 of 2026 and the construction works (civil) will be complete in Q4 of 2027.
- Forest Little to Belcamp - Subject to the grant of statutory approval, it is anticipated that the construction phase (civil works only) will commence in Q3 of 2027 and the construction works (civil) will be complete in Q1 of 2029.

1.7 Population and Human Health

The potential for impacts on population and human health are associated with the construction phase due to potential impacts of air, noise and dust emissions and traffic on the receiving environment.

Construction phase effects considered impacts on the following:

- Impacts on Demographic and Economic Profile

- During the construction phase, the proposed development will create additional construction-related jobs. The effect of this will provide incoming population utilising existing facilities. This will provide additional spending and income to the area, a slight positive impact with regards to the demographic/economic profile.
- Construction methodology will ensure the hours of construction will minimise potential impacts to nearby residents, including schools and nursing homes.
- In addition to direct employment, the supply of building materials and the provision of professional services will generate off-site employment and economic activity.
- It is not expected that there will be a negative impact on the demographic profile during the construction phase of the proposed development.
- Impacts on Housing and Land Use
 - There will be a temporary change in land use due to construction of UGC routes on private property and off-road sections, including GAA pitches, developer's/agricultural lands, DAA lands, carparks, lands adjacent to M1 and M50 (Newbury to Ballystruan).
 - Land will be re-instated to the satisfaction of the landowners. The effects will be temporary in nature.
- Impacts on Traffic and Transport
 - Estimated traffic movements associated with the UGC works are assessed in Chapter 17 of this EIAR.
 - Due to the width of the joint bays and nature of the road network in the area means that temporary lane closures will be required along the route during the cable laying and joint bay elements of the construction phase.
 - Passing bays, may facilitate vehicle movements around joint bays where space allows.
 - Accessibility to private properties and lands will be maintained at all times during construction, however there may be temporary disruptions.
 - There will also be increased traffic in the area surrounding the site due to construction vehicles.
- Impacts on Tourism, Recreation and Amenities
 - There will be temporary disruption to some tourism, recreation and amenities during the construction phase during periods when road traffic is affected.
- Impacts on population centres
 - Based on the proximity of population centres to the proposed cable routes, temporary-short term and slight nuisance effects are likely during the construction phase.
- Human Health and Wellbeing
 - As with any construction project, there is still potential for adverse impacts associated with the natural environment and nuisance (such as noise and dust emissions). There will be no significant offsite health risks.
 - Construction traffic and possible nuisances related to construction access requirements and temporary traffic congestion and traffic diversions will have a slight negative impact as alternative routes may be chosen to avoid the area of disruption, causing additional travel time and disruption to those affected. This is considered to be temporary in nature as the construction works move sequentially along the carriageway/cable route.
 - There will be slight adverse temporary disturbance impacts associated with the proposed development. Given the nature of the development, the sensitivity of human health and wellbeing receptors to disturbance, impacts are considered slight and temporary during the construction phase and shall not extend into the longer term.

As detailed previously, given the nature of the proposals, the potential for impacts on population and human health is for the most part associated with the construction phase. Significant adverse impacts during the operational phase are not likely.

1.8 Land, Soils and Hydrogeology

Construction and operational impacts to land, soils and hydrogeology receptors are generally negligible leading to imperceptible effects. No significant effects have been noted with the construction effects which are larger than imperceptible are as follows;

- There will be a permanent minor quantitative loss of soil, and potentially some bedrock as a result of trench and joint bay excavation, leading to a slight adverse effect.
- Avoidance of third party lands for agricultural use is preferred, due to potential interference from root systems or digging. This results in a minor quantitative loss of agricultural arable land above joint bays and trenches, leading to a slight adverse effect.
- Dewatering of trenches and joint bays may cause temporary local changes in groundwater flows and levels, leading to a local slight adverse temporary effect to the aquifer and potentially to groundwater abstractions within approximately 300m of the route. Any impact to groundwater abstractions may be mitigated through no-derogation agreements to ensure continuity of water supply during the dewatering period in which supply might be affected. The permanent effect on the aquifer and abstractions, will be imperceptible as groundwater levels are expected to recover quickly.
- The potential dewatering effect on local springs and wells within 50m of the route is considered a moderate adverse temporary effect. However, the permanent effect on the spring and wells will be imperceptible as groundwater levels are expected to recover quickly.
- During operation, no effects larger than imperceptible are noted.

In conclusion, there are no identified construction or operational impacts from the proposed development which could lead to significant effects on land, soils and hydrogeology receptors. The largest effect noted is a moderate adverse temporary effect (and imperceptible permanent effect) associated with the dewatering impact on local springs and wells.

The proposed development will not result in a change in status of Water Framework Directive groundwater body quantitative or chemical elements or prevent groundwater bodies from reaching good status in the future.

1.9 Surface Water and Flooding

This Surface Water and Flooding chapter has undertaken a desk-top assessment on the basis of the relevant legislation and guidelines. It presents a detailed analysis of the receiving environment in terms of surface water hydrology and water quality, on-site surface water drainage, water supply and wastewater and flood risk for the proposed development.

Potential impacts during construction, operation and decommissioning of the proposed development were assessed with regard to surface waters, water supply and wastewater discharge (including drinking water supply network, foul water and the drainage network), Water Framework Directive (WFD) surface water objectives and flood risk.

Given the nature of the proposals, the potential for impacts on the water environment are for the most part associated with the construction phase of the proposals. These include:

- Impacts to surface water quality from sediment runoff, spillages, discharges or physical modification of culverts.
- Impacts on water supply and drainage infrastructure.
- Impacts on flood risk

The likely significant impacts of the proposed development have been assessed and, where significant uncertainties or risks remain, requirements for additional mitigation and monitoring measures have been stated.

Taking into account the mitigation, residual impacts to surface water and flooding are considered of slight significance and temporary in nature and with the implementation of mitigation measures, the proposed development will not affect surface water flooding.

1.10 Biodiversity

The Biodiversity chapter undertook an assessment of the likely and significant impacts arising from the proposed development on biodiversity. The assessment was undertaken through a desktop assessment, consultations and a series of site visits, as detailed within Chapter 10.

The field surveys were conducted along each proposed cable route to identify significant ecological features, such as protected flora and fauna, invasive species, and habitat features with significant ecological value. The cable route does not pass through any Sites of International Importance, the closest being Ballydoyle Bay SAC/SPA approximately 2.6km away. There is a Proposed Natural Heritage Area (basic wildlife designation in Ireland), Santry Demense, approximately 0.6km away.

Of the larger water crossings proposed (River Santry, River Mayne, Cuckoo Stream and Sluice Stream) connectivity exists to the following downstream, European sites South Dublin Bay and River Tolka Estuary SPA, North Bull Island SPA, Baldoyle Bay SPA and Baldoyle Bay SAC.

The following potential impacts identified associated with the works:

- **Direct Loss of Habitat:** There is potential for a permanent loss of habitat associated with the construction phase of the proposed development.
- **Surface water run-off:** There is potential for impacts to surface water caused by the construction phase of the proposed development.
- **Dust:** Breaking out of existing hardstanding has the potential to cause dust. The proposed construction works are likely to result in the temporary generation of dust.
- **Noise:** There is potential for a temporary increase in noise during the construction phase of the proposed development.
- **Visual Disturbance:** There is potential for a temporary increase in personnel and machinery presence during construction disturb species.
- **Lighting:** Temporary working will be required to facilitate night working during the construction phase of the proposed development. This has potential to cause locally increased light levels.

With appropriate mitigation measures residual impacts to biodiversity are considered slight at a local scale.

1.11 Air

Air quality impacts associated with vehicle traffic during construction and operation of the proposed development are anticipated to be of negligible significance so have been scoped out of the assessment.

A qualitative assessment of construction dust effects has been undertaken for the different construction activities associated with the proposed development.

Across the different construction activities, the level of risk of dust creating nuisance and/or loss of amenity leading to adverse health effects (without mitigation) is predicted to range from 'low'

to 'high' risk' for Forest Little – Belcamp (Option 1) and 'Negligible' to 'Medium' risk for Forest Little – Belcamp (Option 2), Newberry to Ballystruan and Ballystruan to Forest Little.

As the level of risk for Forest Little – Belcamp (Option 1) is comparatively higher than the other option and routes, specific mitigation measures have been recommended. Nevertheless, following the appropriate implementation of the mitigation measures, as included within the Air Quality chapter the air quality impacts associated with dust are predicted to be not significant.

Construction traffic impacts from both the proposed development and cumulatively with other projects have been assessed. The impacts are considered to be 'Neutral' at all receptors. Based on these magnitudes of impact and the conservative assumptions made within the assessment, the impact of both proposed development cumulatively with other projects project on annual mean NO₂ at the nearby receptors are not significant.

Mitigation measures, or equivalent, will be incorporated into the proposed development's Construction Environment Management Plan (CEMP).

The dust and emission control methods will be agreed with the local authority and implemented effectively throughout the construction period.

1.12 Climate

1.12.1 Climate Resilience

Climate resilience during construction has been scoped out of the assessment as there are likely to be negligible changes in climate within the timescales of construction. The construction phase of the proposed development is currently programmed between 2026 and 2031 and climate is not anticipated to have noticeably changed from the current day. Any impacts arising from severe weather events during construction will be managed through the CEMP.

During operation and maintenance, it is not anticipated that climate change will pose significant impacts to the proposed development due to the sufficient international standards the proposed development is designed to. These design standards will ensure that the proposed development is appropriately resilient to climate change.

1.12.2 GHG assessment

Regarding GHG emissions, this development is estimated to emit 24,100tCO₂e for 24km in route length. Considering the Irish Government's commitment to net zero by 2050 and the effect all GHG emissions have upon the climate, any increase or decrease in GHG emissions can be considered to be significant based on their effect on the global climate¹.

Mitigation measures to aid the reduction are detailed in Chapter 12 of the EIAR, Section 12.4. Considering the overall benefit of the project to facilitate the development and use of low-carbon public transportation, lifetime savings of GHG emissions are anticipated to outweigh the calculated embodied emissions during construction and operation.

This development is estimated to emit 24,100tCO₂e for 24km in route length². To provide context, this is approximately equivalent to 0.2% of Ireland's national total CO₂e emissions from public electricity and heat production or approximately 0.07% of Ireland's national total CO₂e

¹ IEMA (2022) Guidance of Assessing Greenhouse Gas Emissions and Evaluating their Significance (2022). Available at: [J35958_IEMA_Greenhouse_Gas_Guidance-1.pdf](#). [Accessed June 2023]

² The estimation is based on the quantitative assessment of the construction stage of the proposed development. Not all carbon sources are considered within the calculation due to data availability.

emissions from energy in 2021³. Therefore, the emissions associated with the proposed development are not immaterial.

While opportunities for carbon reduction (mitigation) have been identified, as they are not quantifiable at this stage of the project, this residual effects assessment assumes that no mitigation has been implemented.

Given that the UGC is expected to result in some direct GHG emissions during the construction and operation, it is reasonable to conclude that the UGC could result in some short-term, negative significant effects. However, this conclusion arises from considering the UGC in isolation, which ignores the UGC's role in powering and enabling a low-carbon form of public transportation.

Calculating the net impact of the proposed UGC on system wide GHG emissions is inherently complex, impossible to predict with any confidence and well beyond the scope of this assessment. However, considering the need for the development, it follows that the UGC can be considered as supportive of system-wide decarbonisation.

1.13 Noise and Vibration

An assessment of predicted noise and vibration impacts arising during the construction and operation of the proposed development has been undertaken. This has been informed by the prediction of impacts using theoretical and empirical models.

Noise and vibration arising during construction will be controlled by the implementation of measures set out in the CEMP.

During the construction phase the need to undertake many activities at night inevitably could lead to temporary significant impacts from construction noise where activities are in close proximity to residential properties.

In general, noise and vibration impacts arising during the construction of the Metrolink 110kV underground cable route are predicted to be low. The noise levels at receptors are expected to be above the associated acoustic thresholds for a short period of time. After factoring in the work duration, the predicted noise impacts are predicted to be 'Not Significant'.

A number of mitigation measures are proposed which will result in residual impacts being not significant.

Construction phase

The table below presents a summary of the likely significant effects identified by the assessment during construction phase

Table 1.1: Summary of significant effects for construction works

Construction Works	Construction Phase Impacts
Duct Installation Works	<p>Noise: 'Not Significant' as affected receptors are only exposed to construction noise level above applicable threshold for 1-2 days.</p> <p>Vibration: Human perception effects are predicted as likely to be 'Significant' at occupied buildings within 12m of the vibratory compaction works and cosmetic damage to light-framed structures (e.g. dwellings) may arise within 1.5m of vibratory compaction works. There are no known receptors that are <15m from construction works hence the vibration impact is considered to be 'Not Significant'.</p>

³ Ireland. 2023 National Inventory Report (NIR). (2023). Available at: [Ireland. 2023 National Inventory Report \(NIR\). | UNFCCC](#). [Accessed June 2023]

Construction Works	Construction Phase Impacts
Horizontal Directional Drilling Works	<p>Noise: 'Not Significant' as predicted construction noise level did not exceed applicable threshold at receptors.</p> <p>Vibration: 'Not Significant' as closest receptor to the works is expected to be >200m away</p>
Joint Bay Installation Works	<p>Noise: 'Not Significant' as affected receptors are only exposed to construction noise level above applicable threshold for 1-2 days.</p> <p>Vibration: Human perception effects are predicted as likely to be 'Significant' at occupied buildings within 12m of the vibratory compaction works and cosmetic damage to light-framed structures (e.g. dwellings) may arise within 1.5m of vibratory compaction works. There are no known receptors that are <15m from construction works hence the vibration impact is considered to be 'Not Significant'.</p>
Cable Installation Works	<p>Noise: 'Not Significant' as affected receptors are only exposed to construction noise level above applicable threshold for 1-2 days.</p> <p>Vibration: 'Not Significant' as works are not vibration intensive</p>
Construction Laydown Areas and Passing Bays	<p>Noise: 'Not Significant'</p> <p>Vibration: 'Not Significant'</p>

1.14 Landscape

The Landscape chapter assesses the likely impacts associated with the proposed development on the receiving environment.

Construction Phase

The progress of the works will be reasonably rapid thus, the nature of the work is reasonably intensive, but transient (continually moving). The effects are considered to be dispersed and temporary. In terms of sensitivity, road corridors themselves are not considered to be a sensitive landscape receptor as they are a highly modified transport route that can be readily reinstated.

As visual receptors, road users are susceptible to the changes in the landscape they pass through and views from the road, particularly in scenic areas. However, they are not susceptible to temporary visual change within the road corridor itself.

Local residents who view the road corridor from their dwellings are also susceptible to visual change, but generally beyond or away from the road corridor and not when the visual change relates to brief periods of road works. For the vast majority of the UGC route being laid under existing road surfaces the sensitivity of the receiving landscape is deemed to be **Low**. For those infrequent sections of the route within open ground toward the north of the airport, the slightly more rural landscape and those that enjoy views across it are more susceptible to construction stage impacts. However, this is still a productive and populated area and therefore landscape sensitivity is deemed to be Medium-low. All visual receptors in the study area are deemed to have a Medium-low sensitivity to both the construction activity and the proposed UGC.

Given the transient and temporary nature of the proposed UGC construction works, the magnitude of impact is deemed to be Low. Thus, the highest-level combination of impact magnitude and receptor sensitivity is Low and Medium respectively resulting in significance of no greater than Slight in open countryside areas and Slight-imperceptible within road corridors.

During the construction phase, the addition of HGV and other construction vehicles to the road network may have a slight impact, however, the movement of HGVs along the surrounding road network travelling to and from the site is typical in this part of the study area, as Dublin Airport and the surrounding commercial and industrial parks currently generate a high degree of HGV traffic. It will also include temporary site lighting and the temporary storage of construction materials and excavated ground. Construction phase impacts on the landscape are considered

to be 'short-term' as the construction stage is likely to take less than 7 years to complete. A summary of construction activities within the site are included below:

- HGVs transporting materials to and from the site of works;
- Movement of heavy earth-moving machinery on-site;
- Temporary storage of excavated materials and construction materials on-site;
- Trenching, laying of cable and backfilling, and associated works;
- Security hoarding and site lighting.

Whilst the physical construction stage works will have a notable impact on the landscape in the immediate context of the proposed development, they are viewed in the context of the busy road networks, commercial and industrial land uses and Dublin Airport. Furthermore, construction related activity and its effect on landscape character will be temporary in duration.

Landscape effects and visual effects have been considered in respect of the MetroLink 110kV Underground Cable Proposed 110kV MetroLink UGCs. There will be negative construction stage effects, but these will be temporary / short term in duration and there will be no material operational stage effects as they will remain underground with the landcover above reinstated.

For the reasons outlined within this chapter, it is considered that the proposed development will not give rise to any significant landscape or visual impacts.

1.15 Archaeology, Architectural and Cultural Heritage

The project crosses both the Fingal County Council, and Dublin City Council administrative areas. The proposed cable routes are located in north Co. Dublin, crossing 35 townlands in the parishes of Coolock, Santry, St. Margaret's, Cloghran, Kinsaley, Balgriffin and Swords.

Of the 25 Record of Monuments and Places (RMP) sites identified within the study area, seven are also registered as Protected Structures by Dublin City Council or Fingal Council. Two RMPs are also recorded in the National Inventory of Architectural Heritage. The RMPs are generally reflective of the archaeological evidence for settlement across the wider landscape. There are two notable RMP clusters in the vicinity of St Margaret's and St. Doolaghs. Both are associated with ecclesiastical settlement.

There are no National Monuments incorporated by the study area, there are no sites with preservation orders incorporated by the study area. There are 18 Protected Structures incorporated by the study area.

Of the 18 protected structures located within the study area, seven are also recorded as RMPs. In addition to this, five of these Protected Structures are recorded in the National Inventory of Architectural Heritage.

There are no areas listed as Architectural Conservation Areas (ACA) incorporated by the study area. There are 13 structures listed in the NIAH incorporated by the study area.

Most impacts during construction phase are likely to be direct impacts as a result of sub-surface disturbance or construction works. All impacts at this phase are considered to be negative and permanent.

Subject to the implementation of the appropriate archaeological mitigation measures during the construction phase of the development, slight residual impacts on archaeological, architectural and cultural heritage are predicted.

1.16 Material Assets

Utility providers within the proposed development area were consulted initially to provide detail of existing utilities and to assist with route selection.

Materials Assets are considered most likely to be affected during the construction stage of the works and not during the operational stage.

There is potential for disruption to services during construction works. Impacts are considered to be localised and temporary in duration.

During the construction phase, temporary construction compounds will be required along the underground cable route, with these locations to be determined. Welfare facilities will be provided at these locations and any discharges will be connected to a sealed holding tank to be emptied and disposed of off-site by a licenced contractor to an approved licenced facility. Water will be tankered onto site as required. Consequently, significant adverse effects on utility services during the construction phase are not likely.

1.16.1 Waste Management – Construction Phase

Waste will be managed in accordance with the Waste Management Hierarchy and *Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities* (EPA, 2020) and the Waste Management Act 1996, and associated Regulations. Consequently, significant adverse effects associated with waste management are not anticipated. Further detail on waste management is provided in the Construction and Environmental Management Plan (CEMP). All operations will be managed and programmed in such a manner as to prevent/minimise waste production and maximise upper tier waste management (i.e. re-use, recycle, and recovery).

Waste sent off site for recovery or disposal will only be conveyed by an authorised waste contractor and transported from the proposed development site to an authorised site of recovery/disposal in a manner which will not adversely affect the environment. All employees will be required to comply with the obligations under the Plan.

The main waste stream arisings (including surplus materials) which are likely to be generated during the construction phase, it is anticipated that the Contractor shall dispose of all debris, sewage, surplus material (including surplus excavated material) and all other waste materials arising from or connected with the proposed development, to an appropriate licensed waste disposal site/facility, fully in accordance with the requirements of current waste management legislation and to the satisfaction of the Engineer and relevant local authorities

In accordance with EU targets under the Waste Framework Directive (2008/98/EC). Waste management targets for anticipated waste arisings regarding reuse / recycling / recovery and disposal rates are to be agreed by the appointed Contractor.

Waste management during the construction works will be required. Impacts will be temporary in duration, however, the measures detailed above will ensure that this will not result in significant impacts in the receiving environment. The effects are likely to be temporary and slight.

1.16.2 Operational Phase

No significant adverse operational phase impacts on utilities services or utility use are anticipated.

It is not anticipated that there will be any waste arisings during the operational phase unless specific repairs are required, where waste will be dealt with as per the construction phase.

1.17 Roads and Traffic

As part of the EIAR an assessment of the proposed development on Roads and Traffic was undertaken. The assessment looks at the cumulative effects associated with committed developments which are likely to generate traffic utilising the same public roads within the Study Area, at the same time as traffic generated by the proposed development, have also been assessed.

Consultation between Fingal County Council, Dublin City Council and the Dublin Airport Authority Traffic Departments was carried out, discussing the routes and any potential road closures and works that may effect the roads within their administrative areas.

Possible effects associated with the construction works are:

- Driver delay; (disruption and delay to users of roads from the road closures, construction works and construction traffic);
- Road safety; and
- Community effects (Pedestrian delay, severance, pedestrian and cyclist amenity; including fear and intimidation).

These effects have potential to be caused due to an increased volume of traffic on the construction vehicle routes, however as these vehicle movements will occur during construction operations only, they are categorised to be short term effects, given the construction period is between one and six years.

The assessment of the significance of the construction vehicle movements on the public road networks within the study area identified that none of the road sections will exceed the significant threshold and at worst effects will be **minor** and therefore **not significant** in terms of the *EIAR Guidelines*. Full mitigation proposals are outlined within the Construction Traffic Management Plan provided within Volume 3: Appendices of the EIAR.

1.18 Major Accidents and/ or Disasters

The potential for significant adverse effects of the proposed development on the environment deriving from its vulnerability to risks of relevant major accidents and / or disasters has been assessed. In all cases it was concluded that the reasonable worst consequences are managed to an acceptable level with existing mitigation in place.

In summary, there are no perceptible impacts with regards Major Accidents and/or Disasters, anticipated during the construction or operational phases.

1.19 Interactions and Cumulative Effects

The nature of the environment is such that interactions between all environmental topics are potentially possible and / or may occur to a certain extent for most projects. Key environmental interactions that have been identified are discussed in the following table.

Table 1.2: Description of Interaction of Disciplines

Interaction	Description
<p>Population and Human Health interactions with: Air, Climate, Noise & Vibration, Surface Water & Flooding, The Landscape, Archaeology, Architectural and Cultural Heritage, Roads and Traffic Transport, Land, Soils & Hydrogeology</p>	<p>Air changes on local community during the construction and operational phase of the project are anticipated to be negligible. Across the different construction activities, the effects of dust creating nuisance and/or loss of amenity leading to adverse health effects is predicted to range from 'low' to 'high' for Forest Little to Belcamp Option 1 and 'low' to 'medium' risk for all other routes. Particulate (PM₁₀) effects range from 'negligible' to 'low' for all routes apart from Forest Little to Belcamp Option 1, which ranges from 'low' to 'medium'. With the appropriate implementation of mitigation, the air quality impacts associated with dust and particulates are predicted to be not significant.</p> <hr/> <p>Climate. During operation, rising temperatures could have significant risks when unmitigated. Implementation of proposed design measures and secondary mitigation measures will mitigate risks to an acceptable level of climate change resilience. Risks considered to be 'significant' may pose residual impacts following mitigation, however this is anticipated to be reduced to 'not significant' and should therefore not pose any notable impacts to the proposed development.</p> <hr/> <p>Noise & Vibration: It is considered that there will be an increase in noise levels and impacts on the local community generated from construction activities. Following the implementation of the proposed mitigation measures, these effects will be minimised and are assessed as having an effect of being Not significant.</p> <hr/> <p>Surface Water & Flooding, There is potential for slight, adverse effects during the construction phase, associated with flood risk, due to water crossings along the cable route. With the implementation of mitigation measures presented within this EIAR the impacts are likely to be minimised.</p> <hr/> <p>The Landscape: Visual impacts associated with the proposed development have the potential to impact on population, for example, views of machinery and hoarding during construction. The significance of construction stage impacts is deemed to be Slight to Slight-imperceptible and Imperceptible within the wider study area, with the works being undertaken on existing roadways and in rural environments. Once reinstated, there will be no material alteration to the landscape. As a result, the UGC will have Negligible magnitude of impact and on visual receptors and landscape character resulting in an Imperceptible significance overall.</p> <hr/> <p>Archaeology, Architectural and Cultural Heritage, Where the construction works are undertaken in roadways, no impacts are envisaged. In the off-road sections, during construction, there is the potential for impacts on previously unrecorded archaeology to be uncovered during excavation works. Any disturbance of ground and drainage patterns can also impact unrecorded archaeology and cultural heritage. Mitigation measures are detailed within Chapter 15 of this EIAR and the Construction Environmental Management Plan which will ensure that such impacts are minimised to negligible/moderate significance.</p>

	<p>Roads and Traffic: During construction there will be road closures which will have an adverse effect on population, as delays are likely, this will be temporary in nature. There will be an increase in construction traffic levels and potential impacts on the local community. The number of vehicles on roads associated with the proposed development is likely to increase during the construction phase due to the movement of construction staff to/from the works areas. During operation, there is no interactions anticipated.</p>
	<p>Land, Soils & Hydrogeology. There will be a loss of agricultural land, in some areas where the proposed development goes off road. As discussed within Chapter 8 – Land, Soils & Hydrogeology, this is considered to be negligible.</p>
<p>Air interactions with Climate, Biodiversity, Roads and Traffic</p>	<p>Climate, The proposed development has the potential for negative impacts on climate. However, air impacts associated with the proposed development are not considered to be significant and ambient pollutant concentrations are well below the relevant air quality standards, no exceedances of air quality standards are anticipated.</p> <p>Biodiversity, Air quality changes on flora and fauna such as dust during construction may affect flora and fauna. Run off from works areas can impact water quality and biodiversity, dust deposition and soiling can impact on biodiversity. Following the implementation of the mitigation measures dust impacts are not predicted to be significant. Consequently, no significant residual dust effects on surface water quality or biodiversity are predicted as discussed within Chapter 11 – Air.</p> <p>Roads and Traffic. During the construction phase, it is not expected that there will be any significant effects from construction road traffic on ambient air quality.</p>
<p>Climate interactions with: Surface Water & Flooding, Biodiversity, Roads and Traffic</p>	<p>Surface Water & Flooding: Key climate trends across Ireland and in Dublin show rising temperatures, wetter winters and drier summers with more frequent extreme weather events. These trends have the potential to lead to risks including exceedance of flooding. The latest climate change guidance has been considered when assessing the impact of the future climate change on flood risk and is included within Chapter 11 Surface Water and Flood Risk, of this EIAR.</p> <p>Biodiversity: The proposed development (along with other future developments) will potentially facilitate a reduction in emissions associated with the use of cars as there is a switch to use of the MetroLink metro line. This will reduce the effect of local emissions on habitats, flora and fauna.</p> <p>Roads and Traffic: During the operational phase, the proposed development, along with other future developments, will provide power for the MetroLink system which will in turn provide additional public transport. This is likely to encourage a move from dependency of car travel as there is a switch to the MetroLink metro line. This will have a positive impact on climate due to lower emissions.</p>
<p>Land, Soils & Hydrogeology interactions with: Surface Water and Flood Risk, Biodiversity, The</p>	<p>Surface Water and Flooding: The excavation of soils and rock for the proposed development, poses a potential risk to nearby watercourses as a result of sediment run off. Earthworks associated pose a risk to waterbody from sediment runoff. Best practice techniques, mitigation measures and guidelines have been outlined in Chapter 18 Land, Soils & Hydrogeology and Chapter 9 Surface Water and Flood Risk and the Construction Environmental Management Plan of this EIAR.</p>

<p>Landscape, Archaeology, Architectural and Cultural Heritage.</p>	<p>Biodiversity: Construction works at water crossings, during the construction phase have the potential to impact on downstream protected areas, should an accidental release occur. Impacts could potentially arise from soil excavation in off road sections and from water-crossing activities. A suite of best practice techniques, mitigation measures and guidelines have been outlined in Chapter 8 Land, Soils & Hydrogeology and Chapter 10 Biodiversity. All construction works involving the movement of soils will consider the identified locations of Invasive Alien Species. A confirmatory invasive species survey will be carried out during the appropriate growing season (May–October). The findings of this invasive species survey will be incorporated into an updated Invasive Species Management Plan by the Contractor’s Ecological Clerk of Works (ECoW).</p>
<p></p>	<p>The Landscape: The construction stage impacts are considered to have a significance of slight negative effects within the immediate surrounds of the site, however this quickly reduces to Slight-imperceptible and Imperceptible within the wider study area in the short term. The overall operational phase landscape impact has a significance deemed to be Imperceptible. Therefore, significant landscape impacts are not anticipated during the construction or operational phases. The impact is assessed fully in Chapter 14 The Landscape of this EIAR.</p>
<p></p>	<p>Archaeology, Architectural and Cultural Heritage: The disturbance of soil during the construction phase of the proposed development has the potential to undercover archaeological finds. Mitigation is outlined within Chapter 15 - Archaeology, Architectural and Cultural Heritage and the CEMP.</p>
<p>Surface Water & Flooding interactions with: Biodiversity, Roads and Traffic,</p>	<p>Biodiversity. The risk that contaminants could be accidentally released into watercourses could potentially have impacts for local communities in terms of poor water quality, especially with the linkage to sensitive areas located downstream. Chapter 10 Biodiversity and the Construction Environmental Management Plan set out measures to prevent the runoff of contaminants during construction.</p>
<p></p>	<p>Roads and Traffic: The proposed development has potential to impact on local roads during construction, including run off from local roads utilised during the construction phase. The implementation of the mitigation measures proposed within Chapter 9 Surface Water and Flood Risk, Chapter 17 Roads and Traffic and the Construction Environmental Management Plan should minimise any residual effects.</p>
<p>Biodiversity interactions with: Noise & Vibration</p>	<p>Noise & Vibration. Noise and vibration can cause disturbance of protected species from noise and vibration generated from construction activities. For activities which emit high levels of noise and for noise emitting works at night, sound reducing hoarding will be placed adjacent to works areas to protect fauna. Mitigation measures can include: the use of mufflers on pneumatic tools, effective exhaust silencers, sound reducing enclosures and machines in intermittent use shall be shut down during periods where they are not required. Further mitigation is included with the Chapter 10 Biodiversity, Chapter 13 Noise and Vibration and the Construction Environmental Management Plan.</p>
<p>Archaeology, Architectural and Cultural Heritage interactions with: Material Assets</p>	<p>Material Assets: As with any works of this nature, there is potential for previously unrecorded archaeology to be encountered during excavation works. Disturbance of ground within newly acquired lands may impact unrecorded archaeology and cultural heritage. The implementation of the measures described in Chapter 15 - Archaeology Architectural and Cultural Heritage and the CEMP will ensure that such impacts are minimised.</p>

Roads and Traffic interactions with: Noise & Vibration, Material Assets

Noise & Vibration: Traffic noise is likely to arise from movement of construction traffic along the cable routes as the trenching progresses and reinstatement delivers materials to construction compounds. The noise and vibration impacts arising during the construction of the underground cable route are predicted to be low. The noise levels at receptors are expected to be above the associated acoustic thresholds for a short period of time. After factoring in the work duration, the predicted noise impacts are predicted to be 'Not Significant'. Chapter 13 Noise and Vibration and the Construction Environmental Management Plan of this EIAR set out measures to reduce the effect of noise from HGV movements on sensitive noise receptors.

Material Assets: There is an interaction between resource and waste management and traffic and transport effects during the construction phase of the proposed development. The transportation of resources and waste to and from the cable route has the potential to affect local traffic and transport patterns during the construction phase. Materials will require transport from the construction compound areas, which are to be confirmed, to the various sections of the proposed development and there will also be material requiring transport for disposal, following the excavation of the trenches. A Construction Traffic Management Plan has been produced and will be updated by the appointed contractor. This is included as within Appendix D.

