

Shannon Technology and Energy Park (STEP) 220kV Grid Connection

Construction Environmental Management Plan

July 2024

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Shannon Technology and Energy Park (STEP) 220kV Grid Connection

Construction Environmental Management Plan

July 2024

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1 Introduction

1.1 Overview of the Proposed Development

The proposed development consists of two 220kV substations and two 220 kV underground cable circuits between the Shannon Technology and Energy Park (STEP) Power Plant and the existing line cable interface mast adjacent to the existing Kilpaddoge Substation, which in turn feeds into the electricity network. The proposed development will be known as the Shannon Technology and Energy Park 220kV Grid Connection.

The proposed development will include:

- Approximately 5km of two 220kV underground cables (ca. 2.2km within the L-1010 and ca. 2.8km off road in greenfield land);
- Two 220kV Gas Insulated Switchgear (GIS) substations, including two-storey GIS buildings and associated transmission infrastructure.
- A 50MVAr shunt reactor including all ancillary equipment
- Buried optical fibre within the cable ducts from the proposed Glansillagh GIS substation to the Line Cable Interface Mast at Kilpaddoge

The cable route originating at the substations, will then be routed adjacent to the STEP facility access road, public road and private lands. The cable will be installed on STEP-owned lands, ca. 2.2 km will be installed under public roadway (L-1010) with the last 2.8 km section located off road in private lands.

The cable route terminates at a Line Cable Interface Mast (LCIM) in proximity to Kilpaddoge substation. One of the underground cables will be jointed into an existing cable on the existing LCIM and the other underground cable will connect to an existing underground cable route, via a joint bay, to feed into the Kilpaddoge substation.

The proposed substations will comprise an EirGrid/ESBN 220 kV substation, named Glansillagh 220 kV substation and one SLNG 220 kV GIS substation, named Knockfinglas 220kV substation, located adjacent to each other and adjacent to the Shannon Technology and Energy Park (STEP) Power Plant.

The proposed substations and reactor will be located directly to the west of the proposed STEP Power Plant, approximately 250 m south of Shannon Estuary and approximately 400m north of the nearest public road, the L-1010. The proposed substations are located within the planning application boundary of the STEP Power Plant project

1.2 Purpose of the CEMP

The purpose of this Construction Environmental Management Plan (CEMP) is to document and describe the main activities that will be undertaken to facilitate the proposed development and to provide a framework of environmental protection measures that will be implemented prior to commencement of, and throughout the duration of, the proposed works. This document will be further developed by the appointed Contractor, within the parameters assessed in the application particulars, taking into account any conditions of the statutory Approval (which, it is anticipated, will include a requirement for agreement of the content of this CEMP with the relevant planning authority – Kerry County Council), the results of confirmatory surveys and any additional measures identified during detailed design. This CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary and appropriate.

The works will be undertaken by Contractors engaged by New Fortress Energy. This CEMP will be provided to the appointed Contractor prior to the commencement of works and will be further developed by the appointed Contractor. The appointed Contractor will be required to obtain approval of any updated CEMP by New Fortress Energy prior to commencement of any works, irrespective of any Condition of Statutory Approval that might be imposed by An Bord Pleanála for agreement of the content of the CEMP with Kerry County Council.

The Contractor's CEMP will set out the approach and methodology which the Contractor will follow in scheduling and undertaking the work and will incorporate the control (mitigation) measures detailed in this CEMP in addition to specified conditions that may be prescribed in any grant of development consent for the proposed development, the measures provided in the Natura Impact Statement (NIS) and the Environmental Impact Assessment Report (EIAR) and any commitments given by New Fortress energy in relation to environmental protection associated with the activities described in this CEMP.

The primary objective of the CEMP is to safeguard the environment, site personnel and nearby sensitive receptors from site activity which may cause harm or nuisance. As such, the CEMP sets out a project framework to ensure that key mitigation measures and conditions set out as part of the planning consent process are translated into measurable actions and are appropriately implemented during the construction phase of the proposed development. As part of this framework, transparent and effective monitoring of the receiving environment during construction will be used to inform and manage on-going activities on site and to demonstrate effectiveness of the measures outlined therein.

A contractual obligation will be included within the tendering processes and implemented on appointment of the Contractor to ensure that the proposed works are developed in compliance with the requirements of the CEMP, EIAR, NIS and planning conditions which will take precedence over this current version of the CEMP in the event of conflicting information.

New Fortress Energy will monitor the contractor(s) performance on a regular basis and will undertake the following compliance checks throughout the duration of the construction period:

- Review contractor documents against the requirements of the CEMP;
- Undertake regular audits;
- Continuously check records;
- Set up a contractor reporting structure; and
- Conduct regular meetings (at least fortnightly) where Environmental Health and Safety is an agenda item.

As will be specified under Roles and Responsibilities, the Contractor's Environmental Clerk of Works (EnCoW) will also coordinate regularly with the corresponding staff delivering the elements of the proposed development.

1.3 Structure of the CEMP

The structure of this CEMP is set out below.

- Chapter 1 describes the purpose of this CEMP
- Chapter 2 describes the roles and responsibilities of the construction phase team
- Chapter 3 describes the proposed construction activities
- Chapter 4 describes the control measures that will be implemented
- Chapter 5 includes an Environmental Incident Management Plan
- Chapter 6 describes the training and auditing protocols that will be implemented
- Chapter 7 describes the communications and procedure for complaints

A Construction Resource Waste Management Plan is provided in Appendix A and a Traffic Management Plan is provided in Appendix B.

2 Roles and Responsibilities

2.1 Introduction

This initial issue of the CEMP identifies the key roles for the construction works. The contractor will update the CEMP and will set out detailed roles and responsibilities (including named individuals) and an organogram of the team structure.

2.2 Employer

New Fortress Energy are the Employer and has the following responsibilities:

- The planning application, including decision-making on the nature and extent of the proposed development, and setting out of environmental mitigation measures, included in this CEMP. The CEMP forms part of the documents supporting the S182A application;
- Post-consent manages the process towards construction including liaison with key environmental agencies and stakeholders;
- Undertakes a Client Engineering function, including inspections to ensure that detailed designs, plant, materials and works including scheduling meet the requirements of its functional specifications, its outline designs and its generic standards; and
- Continued liaison with landowners and local residents, as required.

2.3 Employers Representative

The Employer will employ an independent Environmental Clerk of Works (EnCoW) within the Employer's Representative Team to assess the construction of the Proposed Development and advise the Contractor and Contractor's EnCoW on the implementation of the agreed Contractors CEMP.

2.4 Contractor(s)

Contractors will be appointed following a tendering process and New Fortress Energy will be responsible for the overall works. All parties will be responsible for the Health and Safety of site workers, for the implementation of all mitigation, as set out in Table 4.1 and 4.2 and the completion of the works to the satisfaction of the Employer.

2.5 Site Manager

The Site Manager will be responsible for the day to day running of the site and will direct and oversee the activities of a range of contractors and subcontractors throughout the works. The Site Manager will be responsible for programming of the works, will consult regularly with the Employer and will maintain site safety.

2.6 Contractors' Environmental Clerk of Works

The Contractors' EnCoW will have suitable environmental qualifications and the necessary experience and knowledge appropriate to the role. The Contractors' EnCoW will be delegated sufficient powers under the construction contract so that she / he will be able to instruct the Contractors to stop works and to direct the carrying out of emergency mitigation / clean-up operations. The Contractors' EnCoW will also manage consultation with environmental bodies including the NPWS and IFI. The Contractors' EnCoW will be responsible for carrying out regular monitoring of the Contractors' EnCoW will report monitoring findings as required by the planning consent. The Contractors' EnCoW will also report monitoring findings in writing to

the independent EnCoW within the Employer's Representative Team on a regular basis (at least weekly, but immediately in the case of incidents or accidents).

2.7 Contractor's Ecological Clerk of Works (ECOW)

An Ecological Clerk of Works (ECoW) will be employed by the Contractors to oversee implementation of ecological mitigation and support the Contractors' Environmental Clerk of Works (Contractor's EnCoW) responsible for wider environmental mitigation. This will include monitoring and auditing the works and contractor programmes and works method statements, to ensure mitigation is correctly implemented. The Contractor's EcOW will also ensure any disturbance licenses for protected species are arranged for in the event that confirmatory surveys identify breeding or resting sites within the Zol.

The Contractors' ECoW will advise on ecological mitigation measures which require to be implemented and scheduled as part of the works and will be included in regular liaison meetings between project teams.

The independent EnCoW, employed on behalf of the Employers Representative team, will review and comment on the reports generated by the Contractor's EnCoW/ECoW; namely preconstruction survey reports, and the specific monitoring and compliance reports referenced under the mitigation measures in this CEMP.

3 Proposed Activities

3.1 Introduction

The following sections describe the proposed construction phase activities associated with the construction of the two substations and the underground cabling, discussed in detail within Chapter 5 of the EIAR Description of the Proposed Development.

It is the case that the proposed infrastructure is all sited within a red line application area and subject to environmental assessment.

Following the consenting of the proposed development, should this be the case by ABP, there will be a process of pre-construction detailed design and siting of the grid infrastructure to ensure its most appropriate permanent location. This will occur within the parameters and assessments of the Approved development; any siting which extends outside such parameters, for example outside the red line application area, will require to be the subject of post-consent modification in accordance with the provisions of statutory legislation.

3.2 Overview of the receiving Environment

The proposed development is located in County Kerry, south of the Shannon Estuary, west of Tarbert.

The substations associated with the proposed development will be located adjacent to the proposed power plant facility, approximately 4.5km to the west of Tarbert and approximately 3.5km to the east of Ballylongford. The proposed development occupies part of the following townlands; Ralappane, Kilcolgan Lower, Kilcolgan Upper, Carhoonakineely, Carhoonakilla, Cockhill, Carhoona, Coolnanoonagh, Farranawana and Kilpaddoge.

At the westerly point of the proposed development, the Lower River Shannon Special Area of Conservation (SAC) is approximately 150m to the north and west of the proposed substation/cable route. The River Shannon and River Fergus Estuaries Special Protection Area (SPA) is approximately 500m to the north and west and Ballylongford Bay proposed Natural Heritage Area (pNHA) is approximately 400m to the west of the proposed substation/cable route. At the easterly point of the proposed development, where the connection to the existing network is proposed, the Lower River Shannon SAC and River Shannon and River Fergus Estuaries SPA are approximately 400m from the proposed development.

The proposed substations are to be located in agricultural pastural lands which comprise primarily of improved agricultural grassland, dry calcareous and neutral grassland, scrub, hedgerows and drainage ditches and depositing/lowland rivers immediately to the southwest and northwest of the proposed substation site.

The proposed underground cable route will cross the Ralappane Stream which discharges into the Shannon Estuary and is fed by smaller drainage ditches along its course. The Ralappane Stream drains directly to the Shannon Estuary via a tidal wetland area to the west of the STEP Power Plant site.

The topography of the land along the proposed development cable route is generally undulating and there are some occupied properties, along and adjacent to the L-1010 carriageway. Tarbert Comprehensive School is located along the L-1010. There is a ferry which runs from Tarbert to Killimer in Co. Clare, this is located to the east of the proposed development.

3.3 **GIS Substations**

The proposed 220kV substations are approximately 50m by 18.5m. The proposed layout is shown in Figure 5.2. Access to the site will be via the STEP Power Plant site access road from the junction of the L-1010 to the site, detailed under the STEP Power Plant Planning Application ABP-PA08.319566.

As set out in the drawing number 229100682-MMD-04-XX-DR-E-0100, the key components of the each of the two proposed 220kV substations and compounds comprise:

- 220kV GIS building
- Lightning Protection Rods
- Lighting Poles
- Interface kiosks (1 No.)
- Property Fence/gates
- Palisade Fence/gates
- Distribution System Operator (DSO) Compound

The EirGrid/ESBN Substation includes external Air Insulated Switchgear (AIS) equipment comprising:

- Cable Sealing End
- Surge Arrestors
- Shunt Reactors
- Current Transformers
- Lightning Masts
- Lighting Poles

The external electrical equipment will not exceed 10m in height with the exception of the lightning protection monopoles which are approximately 18.5m in height.



Figure 3.1: 220kV Gas Insulated Switchgear (GIS) substations and construction compound following landscaping

Each 220kV GIS building will comprise a two-storey over partial basement structure. It will house the new gas insulated switchgear, comprising Sulphur Hexafluoride (SF₆) insulated circuit breakers, disconnectors and other high voltage equipment. Auxiliary services equipment, such as control and telecoms equipment, low voltage switchgear, an emergency diesel generator, and batteries. Welfare facilities (i.e. toilets, sinks, messroom, workshop.) will also be located within the EirGrid/ESBN substation building. The underground cables will connect with the substation via the partial basement, which will be designed to prevent any water ingress.

A below ground earth grid will be installed in a grid arrangement approximately 600-750 mm below the finished surface. The earth grid will consist of bare stranded copper conductor with an outside diameter of approximately 95mm². The purpose of the earth grid is to ensure personnel and public safety during electrical faults that may occur on the transmission grid.

Fencing around the entire EirGrid/ESBN substation compound, with the exception of the site entrances/gates, will comprise of external 1.4m high post-and-rail property fencing and internal 2.6m high galvanised steel palisade security fencing with black powder coat. Fencing around the SLNG substation compound will comprise a 2.6m high galvanised steel palisade fence with black powder coat.

Directional light fittings have been incorporated within the plan in order to minimise light pollution in the surrounding area. Lighting contours can be seen in drawing 229100682-MMD-03-XX-DR-E-0213.

The locations of outdoor equipment are detailed within planning drawing 229100682-MMD-04-XX-DR-E-0100.

The dimensions of the proposed structures on the GIS substation and compound site are summarised in Table 5.1.

The dimensions of the proposed structures on the GIS substation and compound site are summarised in Table 3.1.

Structure	Number of Structures	Length (m)	Width (m)	Height (m)	
EirGrid/ESBN 220kV Substation Building – Glansillagh	1	49	18.5	17.0	
SLNG 220kV Substation Building - Knockfinglas	1	50	18.5	17.0	
Lightning Rods (6 per building)	12	n/a	n/a	2	
Lightning Masts	2	n/a	n/a	18.5	
Shunt Reactor	3	3.4	3.4	10	
Cable Sealing End (with associated steelwork)	3	n/a	n/a	6.2	
Post Insulators (with associated steelwork)	6	n/a	n/a	6.2	
Surge Arrestors (with associated steelwork)	6	n/a	n/a	6.2	
Lighting poles	4	n/a	n/a	2.5	
DSO compound	1	5	5	2.6 (fence)	
Property Fence	1	n/a	n/a	1.4	
Palisade Fence	1	n/a	n/a	2.6	

Table 3.1: Approximate Dimensions of GIS Substation Building and Overground Structures

Source: Mott MacDonald

The building will comprise a typical industrial form, with a structural steel frame clad with profiled metallic sheet wall and roof cladding. Internal walling of masonry will be adopted, except where specific load carrying requirements necessitate the use of reinforced concrete walls.

Industrial claddings will be factory finished according to EirGrid specification and will match the STEP Power Plant. The roof will be shallow pitched and constructed of profiled metal decking on purlins spanning between rafters. The buildings will have access gantries and walkways for access to equipment. These will be constructed of stainless/galvanised steel open grating type flooring supported on steel beams and columns.

External doors and escape doors will generally comprise metal flush doors and mild steel frames. Fire doors will comply with *BS* 476-22:1987 - *Fire tests on building materials and structures*.

The ultimate choice of finish and colour of the metal cladding coating will be made considering the specified service life, resistance to degradation under long term exposure to climatic conditions and will comply with the requirements of the statutory approval, if granted. A typical 220kV GIS Substation Building is shown in Figure 3.2.

Figure 3.2: Typical 220kV GIS Substation Building



Source: Mott MacDonald

3.4 Underground Cables

The proposed underground cable development will comprise two 220kV electricity cables and fibre optic cables to facilitate the connection of electricity generated at the power plant facility to the national grid.

Connection will be via two 220kV underground cables (UGC) approximately 5km in length passing adjacent to the site access road, the L-1010 and then through agricultural lands to a feed in loop adjacent to the existing Kilpaddoge Substation.

Access to the UGC will be via the access road to the STEP Power Plant facility, detailed under ABP-PA08.319566. Access to the greenfield lands to the east will be via existing private tracks. Access to the joint bays to the west of the LCIM and at the LCIM is required by EirGrid and stone access tracks will be provided.

The underground cable route also includes ancillary works such as, clearance of laydown areas, use of a temporary compound adjacent to the proposed substations, and three temporary laydown areas. The location of these is shown on drawings 229100682-MMD-04-XX-DR-E-0011 to 229100682-MMD-04-XX-DR-E-0018. The proposed development will incorporate the following:

- There are 14no. joint bays proposed (to accommodate both 220kV cable circuits), with communication chambers and link boxes;
- Water and utility crossings, including Horizontal Directional Drilling (HDD) at crossing of the Kilpaddoge substation access road);
- Temporary construction compounds including associated site works and ancillary staff facilities and parking; and
- 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 of substation access road and vegetation clearance.

The UGC will be installed in a flat formation. The assessments included in this EIAR is based on a flat formation which has a wider trench width.

3.5 Description of the Construction Phase

3.5.1 Construction Phase Activities - Substations

General construction phase activities associated with the substation are set out below.

The site preparation works will be undertaken as part of the STEP Power Plant project (described under Planning Application ABP-PA08.319566) and will include:

- Demarcation of construction works areas, clearance, and site levelling to prepare the works area. As the substations are to be located on an area set aside for the STEP Power Plant laydown area, the site levelling works will be completed as part of the STEP Power Plant enabling works.
- Topsoil will be stripped using excavators. The topsoil will be stockpiled within the demarcated boundary. The grounds will be built up to a finished ground level of 18-20 metres above ordnance datum.
- Stone for compound surfacing will be graded into place using excavator.

The main civil works for constructing the new GIS buildings will include:

- Foundations works
- Structural steelwork erection
- Cladding and building finishing works
- Permanent water supply and drainage works
- Miscellaneous civil works: paving, landscaping, permanent fencing and completion of works.

Foundation Works

Foundation construction will commence after the completion of STEP Power Plant site clearance and grading. The foundation installation will involve excavation, form work, steel reinforcement, and concrete placement. Foundations will be designed in accordance with the appropriate and relevant EirGrid Technical Specifications. Excavated material will either be reused on-site or disposed of off-site in accordance with applicable requirements under the Waste Management Act 1996, as amended and associated regulations.

When the foundations have been set, the copper earth mat will be installed into the soil in and around the foundation and will cover the entire substation compound. The earth mat installation and permitted operating limits will be designed in accordance with the appropriate and relevant EirGrid Technical Specifications.

Structural Steelwork Erection

Following the installation of the foundation and earth mat, construction activities will shift to the erection of structural steelwork. The GIS Building will be a steel portal two storey building over partial basement constructed in accordance with EirGrid technical specification. The ground floor level will include service rooms, loading bay, generator room, relay room, battery room and access to the cable basement area. The first-floor area of the building will be constructed to accommodate the 220kV switchgear assembly and a storeroom.

Cladding and Building Finishing Works

Cladding and building finishing works and the installation of building services, e.g. drainage, internal circulation road, will be undertaken once the structural frame and steel support structures are completed.

A fire detection and alarm system will be specified during the detail design of the substation in compliance with EirGrid requirements. A Fire Safety certificate application to Kerry County

Council will be made in advance of construction in accordance with the standard approach for the construction of substations.

Miscellaneous Civil Works: Paving, Landscaping, Permanent Fencing and Completion of Works

Fencing around the entire substation compound, with the exception of the site entrances, will comprise a 2.6m high palisade security fencing, as shown on Drawing No. 229100682-MMD-04-XX-DR-E-0305. The proposed EirGrid/ESBN GIS substation will also have a 1.4m high concrete post-and-rail property fence along the perimeter of the substation site. The installation of these fences will comprise root mounted posts (posts driven into ground). There will be negligible ground borne vibration due to relatively small diameter of these posts. This would negate the requirement for pad footings below each post.

Electrical Installation of GIS plant will be delivered to the substation compound and unloaded within the GIS building loading bay. The gantry crane located within the hoisting area will lift the GIS plant to the first storey of the building and position it appropriately within the GIS Equipment Room. The plant will then be bolted together in place. Following the installation of plant within the GIS building, wiring and cabling of GIS plant and associated protection and control cabinets will be undertaken to the specifications and standards set out by the manufacturer.

3.5.1.1 Outline Construction Schedule and Timing of Works - Substations

Subject to the grant of statutory approval, it is expected that construction will commence in October 2026, following the enabling works, earthworks and site preparation works for the STEP Power Plant which are anticipated to start in January 2026 as per STEP Power Plant Planning Application (ABP-PA08.319566). These dates are indicative and subject to change.

The overall duration of the construction phase is expected to be approximately 27 months for both the substations and underground cables.

For the substations, construction activities will gradually phase out from pre-construction to predominantly civil activities followed by commissioning and testing of the substation and equipment. It is expected that the number of construction workers required throughout the duration of the construction phase will peak at approximately 60 persons for the substation, and up to three crews of 5 to 8 persons for the cable system. Some of the activities noted in Table 5.3 will be carried out in parallel.

The majority of the construction activities are not dependent on outages on the existing transmission system.

Construction Phase	Activity	Approximate Timeline
Site Preparation (GIS Substation)	Preliminary site Drainage Works	18 Weeks
	Site Preparation and Groundworks	
	Drainage	
	Permanent Fencing Installation	
	Ducting for cable circuits to Demand Customer from substation to transition pit	
GIS Substations (civils)	Civil construction of new GIS Substation Building	34 weeks
	Compound levelling and finishing surface	
GIS Substations (electrical)	Electrical Installation	32 weeks
	Pre-commissioning	

Table 3.2: Indicative Construction Programme - Substations

Construction Phase	Activity	Approximate Timeline
Substation Energisation	Final commissioning and energisation	12 weeks

3.5.2 Construction Phase Activities - Underground cabling

The following sections describe the proposed construction phase activities associated with the installation of the two proposed underground cables.

Following the consenting of the proposed development, should this be the case by ABP, there will be a process of pre-construction detailed design and micro-siting of the grid infrastructure. This will occur within the parameters and assessments of the approved development; any micro-siting which extends outside such parameters, for example outside the red line application area, will be subject to post-consent modification in accordance with the provisions of statutory legislation, as required. Throughout the design and assessment process, all reasonable and practically achievable measures have been taken to minimise and avoid impacts.

3.5.2.1 Trenching and Ducting

The standard trench dimensions for a single 220kV cable circuit in agricultural lands in flat formation is a width of 1.7m and depth of 1.575m with a centre-to-centre spacing of 5.5m, to allow for standard formation proposed for location within trenching for greenfield routes. Refer to Figure 3.3.



Figure 3.3: Double Trench Cross Section within agricultural lands

Following excavation of the trench, bedding material, Cement Bound Granular Material (CBGM) will then be laid, the ducts put in place, protection strips laid on top and the trench will be backfilled.

The duct installation will progress sequentially starting at one joint bay and moving towards the next joint bay along the route. The construction area will move in tandem with the progress of the duct installation, with only the relevant portion of the section cordoned off while under construction.

If there are excavations required where there are existing utilities, hand digging and the use of smaller excavators may also be required.

For cross-country sections, a temporary working strip of approximately 38m in width is proposed (Figure 3.4).

Figure 3.4: 220kV Cable Trench in Flat Formation Typical Construction Swathe in Private Lands



The working strip is required for the following reasons:

- To facilitate the storage of topsoil which must be removed from:
 - The footprint of the temporary construction access track (typically up to 5m in width).
 - The footprint of the cable trench.
 - A buffer strip between the temporary access track and the trench (for safety).
 - Subsoil storage area.
 - Materials storage areas.
- To facilitate the laying of the temporary construction access track alongside the cable trench to allow for the movement of construction equipment and materials along the section of the route on the farmland.
- To facilitate the excavation of the cable trench and the installation of the cable ducting.
- To facilitate the storage of distinct layers of subsoils excavated from the cable trench in segregated piles for later reinstatement to the original soil profile.

Approximately 30-50 m of trenching and ducting is completed in a day, dependent on conditions and location. Figure 3.5 illustrates a trench within agricultural lands.



Figure 3.5: Typical underground cable construction in agricultural lands

3.5.2.2 Cable Installation and Jointing

The cables will be brought to site on cable drums which will then be placed into position. Once the drum is set up, a winch system at the remote joint bay location(s), including pulling cable, will be attached to the nose of the cable and rollers will be used to guide the cable end towards the duct. The cables will then be pulled into the duct with lubrication being applied to the cable and duct throughout the process in order to control pulling tensions.

A bend radius of typically 20m or greater is used to navigate changes in direction for the cable route. The bend radius can be reduced to 6m to navigate very tight corners however as this introduces increased pulling tensions when installing the cable, it is used sparingly and only where required.

As detailed previously, joint bays will be required to be installed along the cable route to join consecutive lengths of cable and to facilitate cable pulling.

The width of the joint bays and the nature of the road network in the area means that partial road closures and diversions may be required in some areas along the route during cable installation. However, all reasonable and practically achievable measures, such as moving of equipment and placing temporary covers over the joint bays to allow essential access for vehicles, will be implemented to facilitate local access requirements for emergency services, residential and commercial purposes. Chapter 17 Roads and Traffic details proposed traffic management measures. Specific traffic management requirements and localised arrangements will be developed by the appointed contractor(s) and will be agreed in advance of implementation with the appropriate local authority.

Joint bays generally consist of precast concrete walls and base located below ground with typical approximate dimensions of 8m length x 2.5m width x 2.3m depth for 220kV joint bays. The length of the joint bays may be longer subject to the requirements of the cable manufacturer. Sand or lean mix concrete will be used as required as a blinding layer to the underside of the chamber. The ducts will be installed to each end of the chamber, then proven,

cleaned and sealed. Figure 3.6 illustrates an indicative joint bay with Figure 3.7 illustrating a pre-cast joint bay and Figure 3.8 illustrates the cable pulling set up.

Figure 3.6: Indicative Joint Bay





Source: Mott MacDonald

Figure 3.7: Pre-cast Joint Bay prior to Cable Installation





Figure 3.8: Typical Set-Up of HV Cable Pulling Procedure

3.5.2.3 Cable Crossing

Underground cabling crossings on the Kilpaddoge substation access road are proposed to be crossed by HDD. Crossing underneath overhead power lines will require mitigation during the construction phase ensuring that a suitable distance from the cabling is maintained by construction equipment and staff and staff welfare and safety is maintained.

3.5.2.4 Water crossings

There will be a crossing at the Ralappane Stream which will be an open cut crossing.

Kerry County Council will construct a second crossing of the Ralappane stream and a crossing of the Farranawana stream under their Part 8 consent for the L-1010 road widening works.

Open Cut Crossings

Open cut water crossings have the potential to generate silt and suspended solids. In order to reduce the risk of discharging sediment it is proposed to carry out all of these works in a dry works area.

The dry works area will be isolated by installing an impermeable barrier between the watercourse and the works area. The impermeable barrier will be tailored to the watercourse in question. Techniques include the use of inflatable dams, frame dams or, in smaller watercourses, sandbags (double-bagged and underfilled; containing only clean washed sand).

Water pumped from the dry works area will be treated using settlement tanks to remove sediment prior to discharge back to the watercourse. In consultation with Inland Fisheries Ireland (IFI), greater filtration of silt may be achieved prior to discharge, through proposed use of

silt de-watering bags which trap silt and expel only clean water and can be left to biodegrade on riverbanks as a habitat enhancement measure.

Water will be conveyed over the isolated section of channel by pumping or the use of a temporary diversion. Where sufficient capacity is available, and there is no risk of excessive scour, the diversion will be within the footprint of the existing channel.

The existence of a temporary impermeable barrier within the channel, will have a direct impact on the cross section of the channel and is expected to give rise to localised changes in water depth, velocities and sediment erosion / deposition.

Where open trenching is proposed, site restoration works will be carried out following completion of the crossing, in agreement with IFI. These works may include riverbank stabilization, gravel replacements etc. In all cases, the site will be restored post installation.

Open cut trenching works will not be carried out during extreme rainfall or high flow events. Met Éireann provides a 5-day weather forecast via its website (www.met.ie) and works will not take place at least during yellow, orange and red weather warnings. The Contractor's Environmental Clerk of Works (EnCOW) will monitor this daily and will provide reports for audit.

Unless otherwise agreed with IFI, any element of the works requiring instream works will be restricted to the fisheries open season (i.e. between July and September inclusive). Where trenching (instream) works are proposed, electrofishing may be required to remove fish under licence from IFI. Method statements will be developed in agreement with IFI for the works.

The following will be ensured.

- Use of flume pipes (as appropriate) to allow continual flow.
- Use of closed buckets for backhoe dredgers and use of silt screens.
- Daily field monitoring of turbidity to maintain increases below 10 Nephelometric Turbidity Units (NTU's) in any 24-hour period.

Further measures in relation to water quality are discussed in Chapter 8 of the EIAR.

3.5.2.5 Connection to Kilpaddoge and Tarbert substations

The two underground cables will connect to the national transmission network via two separate connections.

The connection to the Tarbert substation is via a LCIM (Line Cable Interface Mast), as shown in figure 3.9.

Figure 3.9: Line Cable Interface Mast



Source: Mott MacDonald

One of the underground cables will be jointed into the conductor on the existing LCIM, from where it will connect to the Tarbert substation via the existing overhead line.

The second underground cable will connect to an existing underground cable at the LCIM, via a joint bay, to feed into the Kilpaddoge substation.

The connection of the underground cables to the existing cable and conductor will require an outage.

From the Kilpaddoge and Tarbert substations there will be connection to the wider existing grid network.

3.5.2.6 Indicative Construction Programme – Underground Cabling

Table 3.3: Indicative Construction Programme – Underground Cabling

Construction Phase	Activity	Approximate Timeline
Civil Works		
	Pre-construction	12 weeks
	Trenching and ducting works and temporary reinstatement	30 weeks
Total		42 weeks
Electrical Works		
	Pre-construction works	4 weeks

Construction Phase	Activity	Approximate Timeline
	HV cable joint bay re-excavation	3 weeks
	Proving of ducting/HV cable jointing	2 weeks
	HV cable jointing	28 weeks
	HV cable commissioning (sheath test, cross bonding and HV/AC testing)	4 weeks
	Permanent re-instatement of joint bays (Civils contractor)	3 weeks
Total		44 weeks

3.5.3 Temporary Construction Compounds

A main temporary laydown area will be located adjacent to the proposed substations, beside the main STEP Power Plant. Three smaller temporary laydown areas are also proposed, one south of the main temporary compound and adjacent to the access road and two to the east of the proposed development in proximity to the LCIM.

Temporary facilities will be provided at the main compound which will include construction phase car parking, welfare facilities and laydown areas as necessary. Any discharges from temporary welfare facilities 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.

3.5.4 Construction Traffic

It is expected that an average of approximately 16 Heavy Goods Vehicle (HGV) movements per day will be required during the site preparation and civil construction phase of the proposed substation construction. This is expected to reduce during the electrical installation and commissioning phase of the substation.

For the cable route installation, an average of approximately 48 HGV movements per day will be required during the civil construction of the cable route. Once the civil works are completed, the electrical installation is expected to require a maximum of 12 HGV movements per day.

The number of construction workers required during the construction phase is expected to peak at approximately 60 persons for the substation construction, and 5 - 8 persons per crew working on the cable route. It is expected that up to three crews may be working on the cable route at a time.

Table 3.4: Average Daily Peak HGV Movements

	HGV Movements (civil)
Substation construction	16
Underground Cabling	48

3.5.5 Construction Waste

As the substation is to be constructed on a platform prepared as part of the STEP Power Plant Development, the only excavation will be the column required for the installation of foundations, drainage and the shallow cable basement. In total, the approximate volume of excavated material which will not be reinstated for the two substations is 4,600m³ (3,700 m³ for substation foundations, 700m³ for drainage).

Following the excavation for the ducting, the existing soil will be reinstated with the exception of the volume required for the duct banks which will be filled with Cement Bound Granular Mixture (CBGM) encasing High Density Polyethylene (HDPE) ducting, and the volumes required for the

joint bays, link boxes and communications chambers. In total, the approximate volume of excavated material which will not be reinstated for the cable route is 9355m³. Topsoil and subsoil excess will remain within the agricultural properties, as required by the individual landowners. Any surplus material will be removed off-site by a licenced contractor and in compliance with the Waste Management Act, 1996, as amended.

3.5.6 Construction working hours

Construction phase works will take place between the hours of 07:30 to 18:00 (Monday to Friday) and 08:00 to 14:00 (Saturday). No works will take place on Sundays or Bank Holidays.

It is proposed to stagger the various shift starting and ending times within the construction complex (for example civil employees 07:30 - 18:00, or 07:45 - 17:45). This small stagger in shift start and ending times could lessen the impact of traffic peaking, refer to Chapter 17 (Roads and Traffic).

Construction works outside these hours will only take place in exceptional circumstances (i.e., for specific engineering works e.g., concrete pours etc.). It is likely that a number of continuous construction phase works will also be required outside these hours on a limited number of occasions. These works will be agreed in advance with Kerry County Council. Work conducted outside of core hours, will comply with any restrictions agreed with the planning authorities, in particular regarding the control of noise and traffic.

4 Control Measures

4.1 Introduction

The following sections detail the minimum control (mitigation) measures that will be implemented prior to commencement and throughout the duration of the proposed works.

As detailed in Section 1.2 Purpose of this CEMP, the Contractor's CEMP to be prepared by the appointed Contractor will incorporate the control measures detailed in this CEMP in addition to specified conditions that may be prescribed in any grant of consent, measures outlined in the NIS and the EIAR and any commitments given by New Fortress Energy in relation to environmental protection associated with the activities outlined in this CEMP.

All mitigation measures will be implemented under the supervision of an Environmental Clerk of Works (EnCoW) who will be appointed by the Contractor (the Contractor's EnCoW).

4.2 General Site Environmental Rules

- The proposed works area will be demarcated, and pollution prevention measures will be implemented prior to commencement of construction works;
- All pollution control measures will be designed, installed, and maintained in accordance with CIRIA guidance for 'Environmental Good Practice on Site' (C741) and 'Control of water pollution from linear construction projects. Technical guidance' (C648) and under the supervision of an Environmental Clerk of Works (EnCoW);
- All mitigation will be implemented under the supervision of the Contractor's EnCoW; and
- The EnCoW will carry out daily inspection of works areas for evidence of pollution, and areas where corrective action is required.

4.3 Construction Environmental Management – Measures to be Implemented

Table 4.1 details the mitigation measures in the EIAR and Table 4.2 details Additional Mitigation and Monitoring Measures proposed within the AA/NIS

Table 4.1: Mitigation and Monitoring Measures

Reference	Phase	Mitigation and Monitoring
Chapter 6 Po	pulation and Human Health	
6.1	Construction	No HGV traffic will be allowed pass the existing school on the Coast Road at Tarbert for 20 minutes before and 10 minutes after the opening and closing times of the school. The elimination of passing HGV traffic during these time periods will ensure the continued safe delivery and collection of children at the school' regarding the control of noise and traffic.
6.2		Construction phase works will take place between the hours of 07:30 to 18:00 (Monday to Friday) and 08:00 to 14:00 (Saturday). No works will take place on Sundays or Bank Holidays.
6.3		The start and end times of construction shifts will be staggered within the construction complex (for example civil employees 07:30 – 18:00, or 07:45 – 17:45). This small stagger in shift start and ending times could lessen the impact of traffic peaking, refer to Chapter 17 (Roads and Traffic). Construction works outside these hours will only take place in exceptional circumstances (i.e., for specific engineering works e.g., concrete pours etc.). It is likely that a number of continuous construction phase works will also be required outside these hours on a limited number of occasions. These works will be agreed in advance with Kerry County Council. Work conducted outside of core hours, will comply with any restrictions agreed with the planning authorities.
6.4		To address risks of exposure to radon, workplace radon tests will be carried out in areas of high risk, as required by S.I. Regulation 66 of S.I. No. 30 of 2019. Radon barriers are also to be installed in areas where a high radon risks have been identified.
6.5		Water quality testing will be undertaken pre-construction, during construction and post-construction for any identified drinking water abstraction sources which may be impacted by construction activities.
6.6		The CEMP includes best practice mitigation to minimise air quality and noise impacts associated with construction vehicles and the construction and operation of the plant.
6.7		Where land is used temporarily, it will be reinstated to its previous state after construction.
6.8		Land clearance works will take place on a phased basis and with consideration of seasonal restrictions e.g. lambing season, harvest seasons, etc., if applicable.
6.9		Construction haul roads will be maintained and dust control measures implemented in accordance with best practice set out in Chapter 10 (Air).
6.10	Operational	No specific mitigations relevant to the population and human health assessment are proposed during the operation and maintenance phase. In accordance with best practice (as set out in Chapter 10 (Air) and Chapter 13 (Noise) respectively), air and noise emissions will be minimised at source to reduce exposure of effects on operational personnel.
Chapter 7 La	nd, Soils and Hydrogeology	
	Construction	The following will be implented:

Construction	The following will be implented:
7.1	 Fuel storage – bunded tanks to prevent spillages and designated fuelling areas with spillage control;
7.2	Chemical storage – all potentially polluting chemicals will be stored in secure weatherproof enclosures with spill kits;

Reference	Phase	Mitigation and Monitoring	
7.3		Concrete to be brought to site by covered truck, with wet concrete operations adjacent to watercourses avoided;	
7.4		Concrete truck wash watering/cleaning will be undertaken off-site if possible;	
7.5		Concrete wash water will be collected;	
7.6		A concrete washout management plan will be developed prior to construction by the appointed contractor	
7.7		• The site will be kept secure to prevent vandalism which can lead to pollution from stored liquids escaping and entering drains;	
7.8		 Any spillages will be cleared immediately by excavating and disposing of affected soils in accordance with the Waste Management Act 1996, and associated regulations; 	
7.9		 Silt control measures will be used to control silt generated from activities on site and prevent it from gaining access to nearby waterbodies; and, 	
7.10		 Should dewatering be required any discharges will be treated to remove contaminants and silt and disposed of in accordance with EPA requirements. 	
7.11		A dewatering management plan will be developed prior to construction by the appointed contractor	
7.12		 Adherence to best practice procedures during the construction of the HDD crossing. A HDD Procedure will be developed prior to any works commencing. 	
7.13		 A dewatering management plan will be developed by the contractor before construction work commences. All construction activities, including construction traffic, will be managed through the site Construction Environmental Management Plan (CEMP), which will set out key mitigation measures for, and monitoring of, potential impacts from traffic. 	
7.14		Bentonite Breakout procedure will be developed.	
7.15		 An appropriately qualified person will be present on site during construction to identify visual and olfactory evidence of contamination during excavation. 	
7.16		 Any contaminated ground will be characterised according to Waste Acceptance Criteria and dealt with via a bespoke remediation strategy or a materials management plan. Any waste arising will be managed in accordance with the Waste Management Act 1996 (as amended) and associated Regulations. 	
7.17		In addition to the above, a pre-construction confirmatory survey of wells and groundwater abstractions will be undertaken.	
7.18	Construction	Should dewatering be required, water level monitoring will be undertaken pre-construction, during construction and post-construction for groundwater abstractions which may be impacted by dewatering. A dewatering license will also be obtained for any dewatering operations over 25m ³ /d, in line with EPA regulations and EU law (Environmental Protection Agency, 2024b).	
7.19		Water quality testing should also be undertaken pre-construction, during construction and post-construction for any identified drinking water abstraction sources which may be impacted by construction activities.	
7.20		To address risks of exposure to radon, workplace radon tests will be carried out in areas of high risk, as required by S.I. Regulation 66 of S.I. No. 30 of 2019. Radon barriers are also to be installed in areas where a high radon risks have been identified.	

Referenc	e Phase	Mitigation and Monitoring
		The following mitigation measures will be implemented to address residual landslide risk and risk of contaminant migration through the cable trench (as summarised in Section 7.8):
7.21		 Geotechnical testing during the ground investigation phase will include slope stability testing, which will inform landslide risks and the requirement of additional mitigation measures (such as dewatering).
7.22		A Geotechnical Risk Register will be created to ensure any landslide and slope stability risks are systematically captured.
7.23		 Where groundwater seepage poses a risk to trench or substation excavation stability, additional measures (such as dewatering) will be used to mitigate these risks.
7.24		• A suitably designed drainage system will be installed to divert water away from the landslide risk zones.
7.25		 A phase of ground investigation prior to construction of the cable trench is to include an assessment of shallow groundwater quality within the superficial deposits (if present). This will identify any existing contamination and inform the requirement of remediation (as outlined in the CEMP detailed above).
7.26		Installation of clay barriers along the trench to minimise groundwater flows along the cable route.
Chapter 8	Surface Water	
	Construction	The following mitigation measures will be implemented prior to commencement and throughout the duration of the proposed works. These measures will also be incorporated into the Construction and Environmental Management Plan (CEMP), which the Contractor will develop based on the CEMP which accompanies this application:
8.1		A full-time on-site Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works.
8.2		 Confirmatory pre-construction surveys will be carried out and seasonal constraints will be confirmed in agreement with IFI and National Parks and Wildlife Service (NPWS) and Kerry Council, as appropriate.
8.3		 Works will be carried out in accordance with the guidelines set out by IFI in 'Guidelines on Protecting Fisheries During Construction Works in and Adjacent to Waters' (IFI, 2016) including the programming of instream works within the period July to September or as otherwise agreed with IFI.
8.4	Construction	• The IFI Biosecurity Protocol for Field Survey Works ¹ will be complied with.
8.5		• In the case of a warning of a flood event, plant and materials vulnerable to flooding in 'at risk' construction compounds will be relocated to parts of the compound that are considered to be not at risk of flooding.
		The following mitigation measures will be implemented prior to commencement and throughout the duration of the works:

¹ <u>file.html (fisheriesireland.ie)</u>

Reference	Phase	Mitigation and Monitoring
8.6		• Activities will be planned in advance and machinery will be managed to ensure that the number of trips is limited to the minimum required at each location i.e. the more times a piece of ground is tracked, the more likely it is that vegetative cover will be removed and ruts will be created that will act as miniature rivers where dirty water will flow.
8.7		Tracking beside streams will be avoided to avoid damage to the bankside.
8.8		• Mitigation for the crossing of the Ralappane stream is detailed in Chapter 5 Description of the Proposed Development.
8.9		Geotextile or timber matting will be used on soft ground, and in all protected areas
8.10		• A buffer zone of 10m will be maintained between storage and working areas and watercourses, taking account of the minimum working area required to facilitate the works.
8.11		• The time period over which areas of clearance are left open will be reduced insofar as is reasonably practicable.
8.12		Re-instatement method statements will be subject to approval by the EnCoW.
8.13		Concrete will be brought to site by covered truck. Wet concrete operations adjacent to watercourses will be avoided.
8.14		• The Contractor will ensure that all concrete truck wash watering / cleaning is undertaken offsite where possible and remote from watercourses.
		In order to reduce the risk of contamination arising as a result of spills or leakages, measures including, but not limited to, the following will be employed:
8.15		 All collected waste will be managed in accordance with the Waste Management Act 1996, and associated Regulations:
8.16		 Fuels, chemicals, liquid and solid waste will be stored on impermeable surfaces;
8.17		 Refuelling of plant, equipment and vehicles will be carried out on impermeable surfaces;
8.18		 All tanks and drums will be bunded in accordance with established best practice guidelines; and
8.19		 Spill kits will be provided at all compound locations and carried by all crews during underground cable installation works.
8.20		• Works will not be carried out during extreme rainfall or high flow events. An early flood warning system will be set up to allow the removal of plant and material from construction areas located in Flood Zones A and B in the event of a flood warning.
8.21		• Temporary works will be designed so as not to increase flood risk elsewhere from overland flow, by limiting excavated lengths and providing suitable drainage provision.
8.22	Construction	 Silt fences (to Hy-Tex Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW.
8.23		• Any instream works will be conducted during the period July – September to avoid effects on fisheries, or otherwise agreed with IFI.
		Silt Control Measures
8.24		• Silt control measures will be used to control silt generated from activities on site and prevent it gaining access to surface drainage which could convey silt to larger streams and watercourses.

Reference	Phase	Mitigation and Monitoring
8.25		 Silt control measures include silt traps which can be located in small drains where flow is small and silt fences where runoff from large areas needs to be controlled.
8.26		• Silt fences must be installed in the working areas and not at the watercourse.
8.28		 Access routes will be delineated such that an appropriate set back distance from watercourses is maintained. Where works are to be undertaken adjacent to watercourses the setback distance will be delineated by the EnCoW on site.
8.29		 Where distances between the works and watercourse allow, a minimum setback distance of 30m from the watercourse will be maintained.
8.30		 Where the site is constrained, the best available set back distance will be employed taking account of the minimum working area required to facilitate the works.
		Silt Fences
8.31		• Silt fences will be installed downslope of the area where silt is being generated on disturbed ground.
8.32		• To be effective the silt curtain must contain the area where silt is generated and must terminate on high ground (i.e. an elevated area not in the watercourse).
8.33		• Silt fences will be constructed using a permeable filter fabric (e.g. Hy Tex Terrastop Premium silt fence or similar) and not a mesh.
8.34		• The base of the silt fence will be bedded at least 15-30 cm into the ground at 2 metre intervals.
8.35		 Once installed the silt fence will be inspected by the Environmental Clerk of Works regularly, daily during the proposed works, weekly on completion of the works for at least one month, but particularly after heavy rains.
8.36		• The integrity of the silt fencing will be checked daily by the EnCoW and after poor weather conditions (rain or wind) and any failures rectified immediately.
8.37		• Two lines of silt curtain / fence will be installed, where considered necessary, by the EnCoW.
8.38		Any build-up of sediment along the fence boundary will be removed daily.
8.39		 Silt fences will be maintained until vegetation on the disturbed ground has re-established. Re-instatement method statements will be subject to approval by the EnCoW.
8.40		• The silt fencing must be left in place until the works are completed (which includes removal of any temporary ground treatment).
8.41	Construction	Silt fences will not be removed during heavy rainfall.
8.42		The silt fence will not be pulled from the ground but cutaway at ground level and posts removed.
8.43		A record of when it was installed, inspected and removed will be maintained by the EnCoW.
		Silt Traps

Reference	Phase	Mitigation and Monitoring		
		The purpose of the trap is to reduce the level of solids in the slowly flowing water. The silt trap works by allowing a build-up of water behind it slowing flow and allowing solids to settle out. The following requirements will apply:		
8.44		• Silt traps will only be placed in drains downstream of working areas where the volume of water flow is expected to be low.		
8.45		Silt traps will be made of terram or similar material, not mesh.		
8.46		• The trap will be staked into the banks of the drain / watercourse such that no water can flow around the sides.		
8.47		The material will be bedded into the drain bed/watercourse to prevent water flowing beneath it.		
8.48		• The height of the trap will be lower than the bank heights. The upper edge will be fixed to a timber cross piece. This will allow water to overtop the silt trap and not burst through or around it.		
8.49		 Inspections will be carried out daily; during the proposed works, weekly on completion of the works for at least one month, and after heavy rains, and monthly thereafter until bare areas have developed new growth. 		
8.50		• Any build-up of solids will be carefully removed without removing any vegetation growing on the bottom.		
8.51		In sensitive areas a series of silt traps will be placed in the drain.		
8.52		• The silt trap will not be pulled from the ground but cutaway at ground level and posts removed.		
8.53		• A record of when it was installed, inspected and removed will be maintained by the EnCoW.		
8.54	Operation	Mitigation for stormwater is embedded in the design, described in section 8.4.3 and includes that surface water runoff will flow through a petrol interceptor and conveyed to the STEP Power Plant fire water retention tank before discharging to the Shannon Estuary.		
Chapter 9 Bio	odiversity			
9.1	Construction	An Ecological Clerk of Works (ECoW) will be employed by the Contractor to oversee implementation of mitigation. This will include monitoring and auditing the works and contractor programmes and works method statements, to ensure mitigation is correctly implemented. The Contractor's ECoW will also ensure any disturbance licenses are arranged, prior to construction works following completion of pre- construction confirmatory surveys for invasive species, badgers, otters, bats, amphibians and other terrestrial mammal species such as red squirrel, Irish hare and European hedgehog, based on relevant details outlined in this EIAR and any significant findings of further confirmatory pre-construction surveys outlined above. The Contractor's ECoW will advise on mitigation measures implementation including the scheduling of works and will be included in regular liaison meetings between project teams to ensure that plans are co-ordinated, and impacts are minimised. An independent Environmental Clerk of Works (EnCoW) will be employed on behalf of the Employers Representative team, who will review and comment on the monitoring and compliance reports generated by the Contractor's ECoW.		
9.2	Construction	The ECoW will also ensure works areas are minimised in relation to so impacts to woody vegetation (hedgerow, treeline, and scrub) are minimised as far as possible and disturbance risks to badger setts are avoided if possible. Pre-construction confirmatory surveys will be conducted by the EcOW to demarcate protected mammal breeding sites and confirm disturbance license requirements. Prior to enabling and construction works the site ECOW will review and confirm proposed access routes, demarcate sensitive habitats, and confirm works areas in these locations.		
		Mitigation and Retention of Habitats		

Reference	Phase	Mitigation and Monitoring		
9.3		The following summarises the potential for re vegetation species to mitigate for the loss of s	tention of key habitat features, such as scrub and scrub, hedgerow, and treeline.	d hedgerow, and replanting of woody
9.4	As outlined under Section 9.7.1 of the Biodiversity chapter, the ECoW will monitor works and demarcate areas to ensure that the mitigation for Habitat KER Loss and requirements for site clearance are kept to a minimum.			lemarcate areas to ensure that the required
		Mitigation for Habitat KER Loss		
		Habitat	Estimate of Area Which May Be Lost	Mitigation
		Treelines (WL2)	A total length of 0.65ha of treeline. This incorporates areas for both permanent and temporary works	The ECoW will seek to minimise habitat loss and minimise works areas. Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be fully reinstated.
		Hedgerows (WL1)	A total length of 0.79ha of hedgerow. This incorporates areas for both permanent and temporary works.	The ECoW will seek to minimise habitat loss and minimise works areas. Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be fully reinstated.
9.5		Scrub (WS1)	A total of 1.22ha of scrub is within the RLB. This incorporates areas for both permanent and temporary works.	The ECoW will seek to minimise habitat loss dand minimise works areas. Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be fully reinstated.
		GS2 Dry Calcareous and Neutral Grassland	A total area of 5.52ha of Dry Calcareous Grassland habitat is within the RLB.	Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be reinstated.
		GM1 Marsh	A total area of 0.11ha of marsh habitat is within the RLB.	The ECoW will seek to minimise habitat loss and minimise works areas. Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be fully reinstated.
		GS4 Wet Grassland	A total area of 1.90ha of wet grassland habitat is within the RLB. This is on the edges of the proposed development and outside of any permanent works.	Any areas cleared outside of the permanent works will be reinstated.

Reference	Phase	Mitigation and Monitoring		
		FW2 Lowland Depositing Stream	A total area of 0.03ha of Lowland Depositing Stream habitat is within the RLB. This is where the single Ralappane Stream crossing occurs along the proposed cable route	The ECoW will seek to minimise habitat loss and minimise works areas. Any areas cleared to accommodate works will be fully reinstated.
		FW4 Drainage Ditch	A total of 0.01ha of Drainage Ditch habitat is within the RLB	The ECoW will seek to minimise habitat loss and minimise works areas. Any areas cleared to accommodate works will be fully reinstated.
		GS2 Dry Meadows and Grassy Verge	A total area of 0.38ha of Dry Meadows and Grassy Verge habitat is within the RLB.	Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be reinstated.
		WN6 Wet Willow-Ash-Alder Woodland	A total of 0.02ha of Wet Willow-Ash-Alder Woodland habitat is within the RLB.	The ECoW will seek to minimise habitat loss and minimise works areas. Any areas cleared to accommodate works will be fully reinstated.
		WL2WS1 Treeline/Scrub	A total of 0.01ha of Treeline/Scrub habitat is within the RLB	Any areas cleared where permanent works are not incorporated (i.e., at construction compounds and temporary works areas) will be reinstated.
		Reinstatement		
9.6		Particular care will be taken at the boundary do not cause damage to habitats in this area. clearly visible to machine operators. The Rais estuary, it is important that construction activi water flow, vegetation growth and aquatic fau 9.7.3 for further details on mitigation and mor	between the proposed development and the SAC . These habitats will be securely fenced off early appane Stream runs from the proposed developr ities do not result in pollution of this watercourse, una, or pollution (e.g. chemical). Refer to Chapter hitoring measures for water.	C, SPA and pNHA so that construction activities in the construction phase. The fencing will be nent through the SAC and pNHA to the either through siltation, which interferes with r 8 (Surface Water and Flooding) and Section
9.7		To prevent incidental damage by machinery of which are located in close proximity to workin and site preparation. The ECoW will specify a	or by the deposition of spoil during site works, he ng areas will be clearly marked and fenced off to appropriate protective fencing where required.	dgerow, tree and scrub/woodland vegetation avoid accidental damage during excavations
9.8		Habitats that are damaged and disturbed will planted using appropriate native grass or spe	be reinstated and landscaped once construction ecies native to the areas where necessary.	is complete. Disturbed areas will be seeded or
9.9	Construction	Native woodland and shrub planting will inclu mixes will provide a variety of flowers to enco sourced within Ireland. The overall site will un vegetation will also occur.	de Scot's Pine, Willow, Oak, Alder, Rowan, Hazo burage biodiversity. Wildflower seed mixes will be ndergo seeding once, and then will be left to natu	el, Blackthorn and Holly. Native wildflower from 100% native Irish provenance and irally recolonise. Natural regeneration of
9.10		There will be a defined working area which w habitats. Tree root systems can be damaged	ill be fenced off with designated haul routes to pr during site clearance and groundworks. Materia	revent inadvertent damage to adjoining Is, especially soil and stones, can prevent air

Reference	Phase	Mitigation and Monitoring		
		and water circulating to the roots. No materials will be stored within the root protection area / dripline of trees earmarked for retention. The ECoW will specify appropriate protective fencing where required.		
9.11		Details of the landscaping plan for the proposed development are included in Appendix 9.7. This includes detailed areas of native woodland and native scrub habitat as well as native wildflower planting. The woodland planting mix will be dominated by native species including Scots Pine (<i>Pinus sylvestris</i>), Willow (<i>Salix sp.</i>), Pedunculate Oak (<i>Quercus robur</i>) and Sessile Oak (<i>Quercus petraea</i>), Alder (<i>Alnus glutinosa</i>), Rowan (<i>Sorbus spp</i>). and Crab Apple (<i>Malus spp</i> .). The woodland edge planting mix will include Hazel (<i>Corylus spp</i> .), Hawthorn (<i>Crataegus monogyna</i>), Blackthorn (<i>Prunus spinosa</i>), Elder (<i>Sambucus spp</i> .) and Holly (<i>Ilex spp</i> .). The objective of these elements is to create natural, multi-layered woodland habitat which will be of local ecological value and has the potential to support native flora and fauna. A linear strip of woodland along the southern boundary will help to maintain connectivity (east to west) between habitats in the wider landscape. Additional native specimen trees (Willow, Wild Cherry (<i>Prunus avium</i>), Rowan, Whitebeam (<i>Sorbus subg. Aria</i>) and Silver Birch (<i>Betula pendula</i>)) will be planted on peripheral areas such as the road edge and administration area.		
9.12		A native wildflower mixes (of 100% Irish provenance) will be utilised to provide a more diverse sward which is of higher ecological value for invertebrates and birds. Native wildflower mixes will provide a variety of flowers to encourage biodiversity. Wildflower seed mixes will be from 100% native Irish provenance and sourced within Ireland. The overall site will undergo seeding once, and then will be left to naturally recolonise. Perennial Rye Grass or other vigorous amenity/ agricultural grass species will not be utilised as they tend to over-dominate the sward and reduce overall biodiversity. The final wildflower mix will be specified by the ECoW based on final ground conditions including alkalinity, fertility and moisture levels.		
9.13		Based on the seed mix utilised and on prevailing ground conditions, the ECoW will specify the management regime, including weed control and mowing regime, necessary to maximise biodiversity and habitat value.		
9.14		Reinstatement of linear features such as fencing, hedgerows or treelines from temporary works areas will be carried out in agreement with the landowners and SLNG's Agricultural Liaison officer. Unless otherwise agreed with the Employer's Representative, the Contractor will re- instate hedgerows, treelines, and scrub (to within 3m of the proposed cable route) to a species-rich condition (i.e. five woody species per 30 m), comprising only native species suited to the locality.		
9.15		Where hedgerows are removed due to the works or works areas these areas will be planted with a double staggered hedgerows with native species –As per TII/NRA guidelines:		
9.16		 Height of Plants: In general, taller species such as Hawthorn (<i>Crataegus monogyna</i>) should be in the order of 900 to 1000mm in height while lower growing and trailing species may be between 300 to 450mm in height/length. Where trees are included and, depending on the growth rate of individual species, the majority of plants should be between 900 and 1200mm in height. Occasionally taller trees, up to and including 'standard-sized' plants, may be provided at random or irregular intervals along the hedgerow. 		
9.17	Construction	• A wide variety of native tree species may also be included in the hedgerow for increased species diversity, local character and aesthetics, density and horizontal and vertical structural differentiation. Again, species selected should reflect the composition of existing hedgerows in the surrounding landscape. Where tree species are included in rural hedgerows, they should be randomly dispersed, thereby avoiding potential for development of simple repeating patterns and formal avenues. Depending on local conditions and set-back and safety requirements.		
9.18		• Spacing of Plants: Hedgerows are best planted as double rows, particularly for the establishment of strong diverse plantings. Double rows will be set approximately 300 to 400mm apart, with plants at between 400 to 500mm centres, in staggered rows.		
Reference Phase	Mitigation and Monitoring			
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9.19	 Staking: Normal hedgerow plants will not require staking. Appropriate staking and ties will be provided for stability and establishment purposes where trees exceeding 1.5m in height are included. 			
9.20	 The principal maintenance required in the early years of establishment is controlling development of competing vegetation along the base of the hedgerow. This will ensure better overall establishment and allow for the development of lower branches giving a more desirable dense base. 			
9.21	 Particular care is needed in the use of herbicides in more mature hedgerows as base growth is desirable and, newly established, desirable species may have naturally recolonized the base of the hedgerow. Control will be be focused on undesirable, vigorous or competitive species, e.g. Ragwort or Sycamore. Application of a minimum 50mm deep layer of mulch (bark chipping, etc), will reduce potential for weed growth and hence control weeds. 			
9.22	• Cutting back Hawthorn (Crataegus monogyna) at least once within the first three years after planting will encourage dense growth.			
9.23	 In vulnerable areas, fencing will initially be required to protect plants from browsing by rabbits or hares. Rabbit guards will also be used in limited circumstances where protection is considered appropriate for more expensive plants (especially taller trees) and sensitive species. 			
9.24	 Replacement of plants which fail to grow is necessary at the earliest opportunity so as to maintain the integrity of the establishing hedgerow. Occasional plant failure within densely planted features is not a particular concern – and may lead to development of a more natural hedgerow appearance. In time, particularly wide spreading or leaning trees and shrubs may have to be pruned or removed for safety reasons. 			
9.25	• Long-term coppicing or 'laying' of hedgerows at 20-to-30-year intervals will retain hedgerow biodiversity, density and structure.			
9.26	Where areas of broad-leaved habitat types are removed due to the works or works areas generate new linear boundaries, this will be planted with high canopy broad leaved habitat with native species – as per TII/NRA guidelines:			
9.27	 Plant age and size: Trees will be in the order of 750 to 1200mm in height and will have been transplanted at least once, while taller shrubs may be 600 to 750mm on average. Lower growing shrubs will only be 300 to 450mm in height at planting. 			
9.28	 Spacing: High-canopy woodlands should be diverse and include areas for the development of glades. Such sites should be divided up into planting areas and retained open areas. In addition, planting areas should be further divided to incorporate small, randomly located, individual groups (3 to 5 trees) of dominant tree species such as Oak and Ash. 			
9.29	 Trees: These will be planted at varying distances between 1.5 x 1.5m to 3.0m x 3.0m spacings, while mixed arrangements of shrubs are best planted at between 900 and 1500mm centres depending on species. 			
9.30 Construction	• Staking: In general, trees should not require staking. However, appropriate staking and ties will be provided if plants in excess of 1.5m in height are included.			
9.31	• Specification: As the planting is proposed for ecological and environmental aesthetic reasons (i.e. not for a commercial forest), forked or leaning woody plants, can be incorporated within tree and shrub treatments within the roadside landscape.			
9.32	 The principal maintenance requirement for the establishment of successful high-canopy woodland treatments is control of competing vegetation at the base of individual trees or shrubs. This will ensure better overall establishment and allow for the development of a 			

Reference	Phase	Mitigation and Monitoring
		varied branching structure. Importantly weed control is not required over the entire site as individual plants may be well-spaced and semi-natural grassland treatments may be present in open areas and between individual trees.
9.33		• The application of a minimum 50mm deep layer of mulch (bark chipping, etc.) to a 400mm radius circle around the plant will reduce the potential for weed growth and hence the need for weed control. Otherwise, pulling or spot treatment of noxious and invasive weeds will be required on a regular basis.
9.34		 Initially, fencing may be required to protect plants from browsing by rabbits or hares. It may be possible to utilise rabbit proof fencing around a plot. Rabbit guards may also be used on individual plants. However, it is recommended that, where guards are used, stakes should be provided for plant support if the measure is to prove effective.
9.35		• The replacement of failed plants will be undertaken at the earliest opportunity so as to maintain the integrity of treatments. Particularly large areas of woodland treatments, with low failures rates, may not require replacement planting as occasional losses will provide for some random windows in the canopy and a more natural appearance to the woodland.
9.36		 In time, particularly wide-spreading or leaning trees which pose a hazard to road safety may have to be pruned or removed for safety reasons.
9.37		 Leaving cuttings from tree and shrub thinnings at the site will promote nutrient cycling and restore nutrients to the soil, while, at the same time, providing a substrate for many plant species and providing suitable conditions for use by birds, small mammals and many invertebrates.
9.38		All other sites will be returned as close as possible to their pre-existing condition, using the same woody species removed, or similar verge seed mixes, under the supervision and direction of the ECoW. Plant species of native provenance will be used in all replanting of semi natural habitats.
9.39		The Contractor will commit to a after-care plan for hedging, grassland, and agricultural reinstatement, or as otherwise agreed with the local authority.
9.40		The Contractor's agronomist will inspect, photograph and report in writing to the Employer's Representative on the establishment-phase of all vegetation.
9.41		The Contractor's agronomist will review and advise on any corrective measures required to ensure good condition, immediately after reinstatement.
		Mitigation for the Protection of Water Courses
		General
9.42	Construction	At a minimum, all pollution control measures will be designed, installed, and maintained in accordance with measures outlined below and under the supervision of the Contractor's Environmental Clerk of Works (EnCoW).
		Concrete
9.43		The pouring of concrete will be required during the construction phase. To prevent the runoff of concrete into nearby watercourses, drains and drainage ditches, the following will be implemented.

Reference	Phase	Mitigation and Monitoring
9.44		 No on-site batching will be permitted at the proposed works areas. Concrete will instead be transported to the site within a concrete truck.
9.45		 Quick setting concrete mixes will be used to reduce the risk of contaminated run-off to the nearby watercourses, drains and drainage ditches.
9.46		• Concrete trucks will be washed down in a sealed mortar bin / skip which has been examined in advance for any defects. This requirement will be communicated to each concrete truck driver prior to entering into the works area.
9.47		A concrete washout plan will be developed by the contractor
9.48		• Where concrete pours are to take place instream they will only take place within an isolated, dry, works area.
9.49		 Where the isolated working area requires constant pumping to maintain a dry works area, pumps shall be turned off during the pour, and remain off until concrete has hardening negating a run-off risk.
9.50		• The Contractors EnCoW will ensure that covers are available for freshly poured concrete to avoid wash off in the event of rain.
9.51		Waste concrete slurry will be allowed to dry and taken to a licensed waste depot for disposal.
9.52		• The Contractor will schedule concrete works during relatively dry weather conditions (i.e., when there are no active Met Eireann yellow, orange or red warnings) to reduce the elevated risk of runoff.
9.53		 The Contractor's EnCoW will notify the Employer's Representative Team, the NPWS and IFI immediately of any concrete spills into watercourses, drains and drainage ditches.
		Hydrocarbons
9.54		Where mobile equipment is required e.g., generators, these will be housed in a suitably sized bund / plant nappy such that any leaks / spills are intercepted. All mobile equipment used will be stored within a plant nappy. Operators will regularly inspect the plant nappy, at a minimum on a daily basis, and replace it where it has become contaminated.
9.55		Fuelling and lubrication of plant and equipment will be restricted to the construction compound sites, or laydown areas.
9.56		All waste fuels, oils, and other hazardous wastes will be disposed of in accordance with the requirements of waste legislation.
9.57		Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained during induction to site by the Contractor's EnCoW in the use of this equipment.
9.58		Should use of a spill-kit be required it shall be immediately re-stocked by the Contractor.
9.59	Construction	All spill-kits shall be inspected on a weekly basis by the safety, health, environmental and quality SHEQ officer to ensure they are maintained as fit for purpose. Records relating to these inspections shall be kept.
9.60		Welfare / hygiene facilities will be located within the construction compounds.
9.61		Should one be required, any water from any wheel washes will be removed from site and disposed of in line with Waste Legislation. No wheel wash water will be discharged into any watercourses, drains or drainage ditches.

Reference	e Phase	Mitigation and Monitoring
9.62		Prior to the works commencing, the measures prescribed in this section shall be installed to prevent the downstream transportation of surface water run off associated with vegetation clearance. This may be through the use of features like hay bales. Monitoring of these measures to ensure their continued effectiveness will take place on an on-going basis while the works are proceeding by the SHEQ officer.
9.63		Where watercourse crossings take place within the existing road curtilage, any drains or drainage ditches connecting into the relevant watercourse will be identified and protected through use of sandbags or similar to ensure flows of contaminant laden water do not enter into the watercourses, drains and drainage ditches. Temporary culverts will also be installed in areas where temporary roads/routes are required for regular use and crossing of drainage ditches.
9.64		The clearance of any riparian vegetation will be avoided / or kept to the minimum required for the facilitation of the works such that no unnecessary exposure of riverbanks occurs.
9.65		The Contractor's EnCoW shall direct the Contractor to take any corrective actions required. The Contractor will record all works authorisations, report these to the independent EnCoW within the Employers Representative Team and maintain on file for inspection as required.
9.66		Where the implementation of these measures fail, or are inadequate, the Contractor will implement adapted measures (for example replacement sediment treatment system) in agreement with the Contractor's EnCoW and the Employers Representative Team.
9.67		The IFI Biosecurity Protocol for Field Survey Works will be complied with.
		Open Cut Water Crossing
9.68		Works will be carried out within a dry works area or as otherwise agreed with IFI. The method statement for crossing the Ralappane stream will be agreed with IFI prior to any works commencing.
9.69		The dry works area will be isolated by installing an impermeable barrier between the watercourse and the works area. The impermeable barrier will be tailored to the watercourse in question. Techniques include the use of inflatable dams, frame dams or, in smaller watercourses, sandbags (double-bagged and underfilled, containing only clean washed sand).
9.70		Prior to drying out of the works area, de-fishing will be undertaken under licence. This will include for the translocation of aquatic species including eels out of the works footprint, should they be found within the isolated works area.
9.71		Any pump used to dewater the works area will be fitted with an appropriate screen to prevent aquatic species from being sucked into the pump.
9.72		Water pumped from the dry works area will be treated using settlement tanks to remove sediment prior to discharge back to the watercourse. In consultation with Inland Fisheries Ireland (IFI), greater filtration of silt may be achieved prior to discharge, through proposed use of silt de- watering bags which trap silt and expel only clean water and can be left to biodegrade on riverbanks as a habitat enhancement measure.
9.73	Construction	Water will be conveyed over the isolated section of channel by pumping or the use of a temporary diversion. Where sufficient capacity is available, and there is no risk of excessive scour, the diversion will be within the footprint of the existing channel.
9.74		Where open trenching is proposed, site restoration works will be carried out following completion of the crossing, in agreement with IFI and landowners. These works may include riverbank stabilization, gravel replacements etc. In all cases, the site will be restored post installation.

Reference P	hase	Mitigation and Monitoring
9.75		Open cut trenching works will not be carried out during extreme rainfall or high flow events. Met Éireann provides a 5-day weather forecast via its website (www.met.ie) and works will not take place at least during yellow, orange and red weather warnings. The Contractor's Environmental Clerk of Works (EnCOW) will monitor this daily and will provide reports for audit.
9.76		Unless otherwise agreed with IFI, any element of the works requiring instream works will be restricted to the fisheries open season (i.e. restricted to July to September inclusive). Where trenching (instream) works are proposed, electrofishing may be required to remove fish under licence from IFI. Method statements will be developed in agreement with the Employer's Representative and with IFI for the works.
9.77		A full-time on-site Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works.
9.78		Silt fences will be installed downslope of the area where silt is being generated on disturbed ground as follows:
9.79		To be effective the silt curtain must contain the area where silt is generated and must terminate on high ground (i.e. an elevated area not in the watercourse).
9.80		Silt fences will be constructed using a permeable filter fabric (e.g. Hy Tex Terrastop Premium silt fence or similar) and not a mesh.
9.81		• The base of the silt fence will be bedded at least 15-30 cm into the ground at 2 metre intervals.
9.82		• Once installed the silt fence will be inspected regularly, daily during the proposed works, weekly on completion of the works for at least one month, but particularly after heavy rains.
9.83		 The integrity of the silt fencing will be checked daily by the EnCoW and after poor weather conditions (rain or wind) and any failures rectified immediately.
9.84		• Two lines of silt curtain / fence will be installed, where considered necessary, by the EnCoW.
9.85		• Any build-up of sediment along the fence boundary will be removed daily.
9.86		 Silt fences will be maintained until vegetation on the disturbed ground has re-established. Re-instatement method statements will be subject to approval by the EnCoW.
9.87		• The silt fencing must be left in place until the works are completed (which includes removal of any temporary ground treatment).
9.88		• Silt fences will not be removed during heavy rainfall.
9.89		• The silt fence will not be pulled from the ground but cutaway at ground level and posts removed.
9.90		All instream works, including silt control measures, biosecurity measures, and fish salvage operations will be monitored by an appropriately experienced ECoW.
		Mitigation for the Protection of Otter
9.91		In advance of enabling works, the Contractor's ECoW will conduct a pre-construction confirmatory otter survey in advance of the commencement of any works within 150m of the works areas (where access is available) as per Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. This will allow for the identification of any holts have been established prior to commencement of works. The confirmatory otter survey will be conducted no more than 10-12 months prior to construction commencing. Otter surveys will be carried out having regard to guidance of NRA (2006, 2009)

Reference	Phase	Mitigation and Monitoring
9.92	Construction	The results of pre-construction confirmatory surveys will inform the refinement of mitigation measures (if required) in Contractor method statements, and all results will be incorporated into Contractor's constraint mapping.
9.93		Survey reporting and mapping will also be provided to the Employer's Representative team, and to local authority or other parties where required by conditions.
9.94		Should holts be identified within 150m of the proposed development the following will, at a minimum, be employed, unless otherwise agreed with the NPWS:
9.95		• No works will be undertaken within 150m of holts where breeding females or cubs are present.
9.96		Works within 150m of such a holt can only take place following consultation and in agreement with the NPWS
9.97		No wheeled or tracked vehicles of any kind will be used within 20m of active but nonbreeding holts
9.98		No light work such as digging by hand or scrub will take place within 15m of such holts except under license from NPWS
9.99		• The identified exclusion zones will be fenced and clearly marked on site prior to any invasive works.
9.100		• All contractors on site will be made fully aware or the procedures in relation to the holts by the ECoW.
9.101		 No excavations are to be left uncovered or without means of egress (a sloped plank for example) overnight, as wildlife may fall in or enter and become trapped.
9.102		• No buildings or storage units are to be left open overnight, as wildlife may enter and become trapped.
9.103		No poisonous or potentially harmful substances or materials are to be left unsecured overnight.
9.104		 No vehicles or machinery are to be used if installing any wildlife fencing or exclusion gates.
9.105		Where works in proximity to a holt or couch cannot be avoided, a licence to disturb otter will be required from NPWS. The Contractor will be required to comply with any specific mitigation measures as stipulated under the licence.
		Mitigation for the Protection of Badger
9.106		Prior to any works commencing, a pre-construction confirmatory badger survey will be carried out. Surveys will be conducted having regard to Surveying Badgers (Harris et al.1989) and record signs of badgers, including tracks, hair, latrines and setts. The extent of survey area will be defined as 150m beyond all works areas within suitable habitat as set out in Guidelines for the Treatment of Badgers during the Construction of National Road Schemes (NRA, 2006).
9.107		Prior to works commencing, activity at all identified setts within 150m will be confirmed. This will be confirmed through the use of camera monitoring, setting of footprint traps, soft blocking of sett entrances, or similar. Any risk of disturbance to badger will be subject to disturbance license requirements.
9.108		A description of setts, i.e., main sett, annex sett, or outlier sett, will be provided by the ECoW, along with the level of activity at each. This will allow for an understanding of the importance of setts in the wider context of the local badger population.
9.109	Construction	As per the Guidelines for the Treatment of Badgers during the Construction of National Road Schemes (NRA, 2006), where setts have been confirmed, no heavy machinery will be used within 30m (unless carried out under licence from the NPWS). Lighter machinery (generally

Reference Phase	Mitigation and Monitoring
	wheeled vehicles) will not be used within 20m of a sett entrance and light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances.
9.110	Unless otherwise agreed, and under licence from the NPWS, during the breeding season (December to June inclusive), none of the above works will be undertaken within 50m of active setts, neither will blasting or pile driving within 150m of active setts. An assumption that a sett is active will apply unless proven otherwise during the course of investigation.
9.111	All identified exclusion zones, as outlined above, will be clearly marked out on site and communicated to all site staff prior to works commencing.
9.112	Where works may interfere with a badger sett directly, exclusion will take place as per NRA (2006) guidelines.
9.113	During the construction phase management and protection measures should also include:
9.114	 No excavations are to be left uncovered or without a means of egress (a sloped plank for example) overnight, as badgers may fall in or enter in search of food and become trapped
9.115	No buildings or storage units are to be left open overnight, as badgers may enter and become trapped
9.116	No poisonous or potentially harmful substances or materials are to be left unsecured overnight
9.117	No vehicles or machinery are to be used installing exclusion fencing or gates
9.118	If a badger is discovered or any activity suggesting badgers have been disturbed during construction, all work must cease immediately, and the ecologist should be notified as soon as possible to detail how best to proceed.
9.119	Badgers within the proposed development area are considered to also be susceptible to noise disturbances and as such mitigation outlined in section 9.7.8 for wintering birds will also apply to badger mitigation.
9.120	It is considered, however, that sett 2 identified by DixonBrosnan (see section 9.5.3.2 and Appendix 9.4) will require more specialised mitigation in the form of a permanent sett closure. The closure of the outlier/subsidiary sett 2 will need to be carried out prior to the construction works can begin and will require the creation of an artificial sett to replace the loss of sett 2.
9.121	Pre-construction surveys will be carried out on these setts in order to determine if there has been any change in badger sett usage or spread and to identify appropriate locations for the creation of an artificial sett. Before closure works can begin a suitable site for the new artificial sett should be identified within the current area used by the local badgers in order to aid in the process of the badgers locating the new sett. Once the artificial sett has been constructed and located by the badgers the closure of the original sett can begin.
9.122	The sett closure will be carried out initially by excluding the badgers from the current sett through the use of one-way badger gates which are installed at the sett entrances. A strong wire mesh is to be installed over the surface of the sett to prevent badgers from creating new tunnel entrances or re-entering the sett. The gets will only open outwards allowing badgers to exit but not re-enter the sett.
9.123	The sett exclusion process can only take place between the 1 st of July and the 31 st of November as this is outside of the badgers breeding season.
9.124	The exclusion mesh and gates will be installed by hand so as to minimise disturbance around the setts
	Exclusion Methodology

Reference	Phase	Mitigation and Monitoring
9.125	Construction	• The exclusion process will be initiated by first installing the gates which are fitted in a two-way position to allow badgers to move in and out of the sett freely, thus becoming used to this new feature.
9.126		• After three days the gate will be set to a one-way operation so that badgers can only leave the sett and not re-enter.
9.127		 Wire fencing will also be fitted to cover the extent of the sett, preventing the creation of new tunnels or re-entry of the badger once they have been excluded.
9.128		 The movement of the badgers can then be monitored by placing sticks, sand or gravel immediately inside the gate and sett entrance and by erecting camera traps within the area and focused on the sett entrances. Once no movement has been recorded over a three- week period work can commence on closing the original badger sett permanently.
9.129		• The EcoW will supervise the installation and exclusion, regular monitoring and re-opening of the setts.
9.130		The above mitigation concerning the closure of sett 2 and artificial sett creation will be carried out at least one year before the commencement of works for the proposed development and following the completion of a pre-construction survey and development of a badger mitigation plan outlining details regarding the artificial sett location and structure and time scale for the original sett closure.
		Mitigation for the Protection of Bats
9.131		No bat roosts were identified within the RLB of the proposed development. However, there is potential for roosts to become established in the time prior to construction. As such, as a precaution, a preconstruction confirmatory survey of trees to be felled as part of the works will be undertaken.
9.132		The Design and Construction of any bat mitigation measures will be site specific, and comply with licensing requirements, having regard for relevant guidance including the NRA's "Guidelines for the Treatment of Bats During the Construction of National Road Schemes", and the NPWS Bat Mitigation Guidelines for Ireland.
		The following measures will, at a minimum, be undertaken:
9.133		 Trees with suitability for roosting bats will not be felled in advance of surveying for bats, unless in agreement with the ECoW, and NPWS as relevant.
9.134		 Prior to felling of any trees, an initial bat survey of trees to be felled will be undertaken, by a licensed qualified specialist, to assess the suitability of the tree to contain bat roosts as per Bat Surveys for Professional Ecologists: Good Practice Guidelines.
9.135		 Trees identified with potential roost features will be thoroughly examined, under licence from the NPWS, to ascertain the presence or absence of roosting bats. This will be conducted by an experienced bat expert. The trees will be examined for the presence or absence of bats / bat roosts immediately prior to felling. NPWS (2022) guidance notes that emergence/re-entry surveys of trees are limited in terms of effectiveness. As such, inspections via endoscope will be carried out, including of features at height.
9.136	Construction	Where felling does not occur within one day of the examination, the trees will be re-assessed.
9.137		• Where bat exclusions are required, they will be undertaken in accordance with the requirements of the bat specialist, and any conditions under license. They will not be carried out during the breeding season, between the months of June to August inclusive, or during hibernation in the months of November to March inclusive, unless under license from the NPWS. Where the felling of trees found to be

Reference Phase	Mitigation and Monitoring
	suitable as bat roosts cannot be avoided, appropriate mitigation will be agreed with the NPWS and put in place at least one month in advance of any felling or disturbance.
9.138	 If any bat roost sites are removed by the Works, appropriate replacement bat roost sites will be provided following consultation with the NPWS, and in consultation with the local authority.
9.139	 Any lighting (temporary flood lighting etc.) within compounds and construction area is to be turned off outside working hours to reduce impact on commuting and foraging bats species.
9.140	The Design and Construction of bat mitigation measures will be site specific, and comply with the requirements of the bat specialist, the Standards, the TII's "Guidelines for the Treatment of Bats During the Construction of National Road Schemes", the National Parks and Wildlife Services Bat Mitigation Guidelines for Ireland, the National Parks and Wildlife Service Circular 2/07 Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997.
	Mitigation for the Protection of Breeding Birds
9.141	Minimisation of habitat and reinstatement of areas of habitat which may be used by breeding birds (i.e. scrub, hedgerows, and grassland habitats) is outlined previously in Section 9.7.2.
9.142	As outlined in the description of the development the clearance of all vegetation (except for improved grassland, recognising bare ground, or other vegetation with no nesting potential as determined by the ECoW), will be planned to take place outside of the breeding season for birds, or as determined by risk of disturbance to a nest site.
9.143	Should clearance within the breeding season be required, a suitably qualified ecologist / ECoW will conduct pre-construction confirmatory surveys to assess risk of disturbance to nesting birds to inform vegetation clearance activity. In the event where pre-construction surveys confirm or presume nesting birds are present, an exclusion zone will be established around the nesting bird (to include the risk of abandonment due to indirect disturbance), and no vegetation clearance may proceed until young are presumed to have fledged, or nesting has failed. Repeat surveys will be required if vegetation has not been cleared within 72 hours of the initial survey. This will prevent direct impact to nesting birds within the footprint of the works.
	Mitigation for the Protection of Wintering Birds
9.144	The principle likely disturbance from construction activities are temporary disturbance to very low numbers of SCI from works at the western end of the proposed development. Mitigation measures to minimise noise disturbance form works associated with the development are prescribed hereunder.
9.145	All plant used during the construction phase shall be the quietest of its type, practical for achieving the works, as demonstrated in writing by the Contractor to the local authority, with reference to other noisier models.
9.146	All plant shall be operated and maintained in accordance with the manufacturer's recommendations including the use and maintenance of the specific noise reduction measures in the next bullet.
Construction	The following will be incorporated to reduce the impact further:
9.147	The use of mufflers on pneumatic tools
9.148	Effective exhaust silencers

Reference	Phase	Mitigation and Monitoring
9.149		Sound reducing enclosures
9.150		Machines in intermittent use shall be shut down during periods where they are not required
		Mitigation for the Protection of Other Terrestrial Mammals
9.151		Prior to works commencing in areas of suitable habitat for species such as hare and European hedgehog. A targeted pre-construction survey for each species will be carried out prior to any works taking place. Surveys may include observation surveys, camera traps or hair traps.
9.152		In consideration for red squirrels, should any dreys be identified on site belonging to grey squirrels, these will be removed under licence from the NPWS. These dreys will be replaced using artificial dreys. Any additional measures outlined by the NPWS under the terms of their license will also be incorporated. Mitigation concerning noise and habitats (Section 9.7.2) will also be adhered to and considered regarding other terrestrial mammal species. The implementation of mitigation for breeding birds as outlined in Section 9.7.8 will simultaneously avoid the majority of the main breeding season for species such as the European hedgehog which runs from April – October.
		Mitigation for the Protection of Amphibians
9.153		A pre-construction confirmatory survey for frog will be undertaken prior to works commencing during the breeding season (February and March) at potential suitable breeding habitat (ditches, drains, and standing water impacted).
9.154		When surveying for the species biosecurity measures will be followed to ensure that there is no incidental spread of vector borne diseases between waterbodies. This includes the cleaning, disinfection and drying of all equipment and will have regard to guidelines from IFI.
9.155		Should frog be recorded, translocation of the species to areas outside of the proposed development footprint will be undertaken, in consultation with the NPWS. Any translocation of these species will be under license by the NPWS.
9.156		Any spawn or adult frogs recorded will be captured and removed from affected habitat by hand net and translocated to the nearest area of available suitable habitat that will not be impacted.
Chapter 10	Air	
	Construction	Construction dust emission
10.1		Best practice mitigation measures adapted from the IAQM guidance are presented below. In line with IAQM construction dust guidance, providing adequate dust mitigation measures are implemented onsite, all of which are common practice on all well managed construction sites across the country, then impacts can be adequately controlled to the extent that any effect is Not Significant.
10.2	Construction	The potential dust risk of dust soiling effects is comparatively higher, therefore specific mitigation measures have been recommended. These measures will be presented as draft in the proposed development's CEMP. The dust and emission control methods presented below will be implemented as agreed with the local authority and implemented effectively throughout the construction period.
		Standard Mitigation applicable to all areas (for low to medium risk)
		Communication and Site Management

Reference	Phase	Mitigation and Monitoring
10.3		 Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Information will be shared with the local community and how their feedback will be incorporated into the project's air quality management plans. This will include public meetings, regular updates, and accessible reporting of air quality data.
10.4		 Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This will be the environment manager / engineer or the site manager.
10.5		Display the head or regional office contact information.
10.6		 Develop and implement a dust management plan (DMP), which will include measures to control other emissions, approved by the Local Authority.
10.7		 Record all dust and air quality complaints, identify causes and take appropriate measures to reduce emissions in a timely manner and record the measures taken.
10.8		Make a complaint log available to the planning authority, when requested.
10.9		• Record any exceptional incidents that cause dust and or air emissions, either on or off site, and the action taken to resolve the situation in the log book.
		Monitoring
10.10		 Carry out regular site inspections, record inspection results and make an inspection log available to the planning authority, when requested.
10.11		 Increase frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
10.12		 Undertake daily onsite and offsite inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked.
10.13		 Agree dust deposition, dust flux, or real-time PM₁₀ continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
		Preparing and maintaining the site
10.14		Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
10.15		• Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
10.16		Avoid site runoff of water or mud.
10.17	Construction	Keep site fencing and barriers clean using wet methods.
10.18		Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site.
10.19		Cover, seed or fence stockpiles to prevent wind whipping.

Reference	Phase	Mitigation and Monitoring
		Operations vehicles / machinery and sustainable travel:
10.20		• Ensure all vehicles switch off engines when stationary – no idling vehicles.
10.21		• Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment, where practicable
		Operations
10.22		 Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction.
10.23		 Ensure an adequate water supply on the site for effective dust/ particulate matter suppression/ mitigation using non-potable water, where possible and appropriate.
		Specific mitigation applicable to trackout (with high risk)
10.24		 Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
10.25		Avoid dry sweeping of large areas.
10.26		 Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Chapter 11	Climate Resilience	
11.1	Operation	The operational phase will include inspection and monitoring of the ground and foundations, taking a proactive approach to repair.
11.2		The operational phase of design will consider monitoring of asphalt surface during drought conditions to ensure a proactive approach to maintenance activities.
11.3		In order to ensure that there is no internal property flooding for a storm with a 1 in 100 year return period, a +20% allowance for climate change to be included in the detailed drainage design.
11.4		Application of a concrete sealer to be incorporated as required as part of the detailed design in order to protect the concrete surfaces from water penetration and reduce the risk of erosion.
11.5		Ground stability under future climate conditions to be addressed during detailed design to avoid effects on foundations.
11.6		The planting specification within detailed design to consider choosing native plant species that can withstand increasing temperatures and reduced rainfall conditions, so as to prevent species failure and enhance resilience.
11.7		Detailed design to consider utilisation of materials with higher temperature thresholds for key or critical assets.
11.8		Detailed design to include consideration of wind speeds to design structures resilient to wind loads that account for future climate change.
Chapter 12	Climate Carbon	
	Construction	
12.1		It is recommended that emissions reduction measures are put in place as part of the proposed development throughout the design stage and onwards, leveraging the ability to effect change to achieve GHG emissions reduction over time. GHG reduction is articulated within the

Reference	Phase	Mitigation and Monitoring
		Construction Environmental Management Plan, the Traffic Management Plan and the Construction Resource Waste Management Plan, as well as operational management plans as recommended below:
12.2		Develop construction works in accordance with the best practicable means, to reduce fumes or emissions that could result in additional GHG emissions. For example:
12.3		Use of renewable electricity where practical, such as solar-power to construction lighting or construction cabins;
12.4	Construction	Vehicles and plant with low exhaust emissions will be used and will be serviced regularly
12.5		 Substitute machinery fuels by low-carbon fuels when possible (for example use of alternative fuels such as HVO for construction vehicles);
12.6		 Implement regular maintenance of construction equipment to ensure it is running efficiently;
12.7		Engines will not be left running unnecessarily;
12.8		 Vehicles will be monitored entering the site for noticeable exhaust emissions and site security personnel will have the power to ban offending vehicles from the site;
12.9		 Material transport associated with the project will be assessed in order to reduce associated carbon expenditure (i.e. choosing local suppliers or more sustainable transport options); and
12.10		The Contractor will engage the supply chain to reduce the number of vehicle movements relating to site material.
12.11		Implementation of energy efficiency strategies. For example:
12.12		Use of more efficient construction cabins (with insulation, renewable energy generation, low-energy lighting etc.); and
12.13		 Incorporate energy efficiency into the operation of the proposed development (using motion-activated low-energy lighting, building management systems where appropriate).
12.14		Introduce low-carbon technology and process in design, construction and maintenance of the proposed development. For example:
12.15		 Design with carbon footprint of construction materials in mind, using low-carbon concretes and stell with high recycled content where structurally appropriate;
12.16		 Consider maintenance processes within the design, for example choosing materials with longer durability or reduced maintenance requirements;
12.17		Minimise transport and travel demand during construction by having a travel management plan for site personnel to encourage car-sharing, active travel, use of buses, and prioritise electric vehicles;
12.18		Minimise waste generation and implement circular economy processes, avoiding landfilling and waste incineration;
12.19		Periodically monitor and control the GIS to avoid SF6 leaks; and
12.20		Seek eco-efficient alternatives to SF6 these may include dry air, or other products such as G3 (Green Gas for Grid), C4 gas, 3M Novec 4710.

Reference	Phase	Mitigation and Monitoring
13.1	Construction	The majority of construction activity that generates noise is expected to be undertaken within daytime working hours. Where it is required that noise-emitting activities are undertaken at night, prior notification should be given to the occupiers of nearby dwellings and approved by Local Authority. A Construction Environmental Management Plan (CEMP) that includes noise and vibration mitigation is recommended during the construction phase.
13.2		The impact of noise and vibration on nearby sensitive receptors within the vicinity of the proposed development will be controlled by implementation of the principal of Best Practicable Means (BPM). This can be achieved by undertaking construction activities in accordance with good practice set out in BS 5228 Parts 1 and 2. The preferred approach for controlling construction noise is to reduce noise levels at source where possible but with due regard to practicality.
		Typical means by which noise and vibration may be minimised include the following:
13.3		 prioritise the selection of quieter equipment and working methods;
13.4		• ensure equipment is maintained, in good working order, and is used in accordance with the manufacturer's instructions;
13.5		 members of the construction team will be advised during toolbox briefings on quiet working methods;
13.6		• equipment shall not be left running unnecessarily;
13.7		 equipment shall be fitted with silencers or mufflers where possible;
13.8		• the use of enclosures of temporary screens around static plant whenever feasible;
13.9		 materials shall be lowered instead of being dropped from height;
13.10		• inform nearby sensitive receptors in advance of construction activities and keep them up to date with progress and any changes;
13.11		 give nearby sensitive receptors a point of contact from the contractor; the contact will liaise with residents and maintain good communication between nearby residents and the contractor;
13.12		 manage deliveries to prevent queuing of site traffic at access points;
13.13		• use of adjustable or directional audible vehicle-reversing alarms and/or alternative warning systems (e.g. white noise alarms); and
13.14		• utilising low vibration working methods.
13.15		Good public relations are invaluable in securing public acceptance of construction noise. People are more tolerant of noise if they understand the reason behind it, the likely duration, start and completion dates, and mitigation measures used to minimise noise levels. Letter box drops explaining these will be undertaken. A dedicated site contact will be nominated to liaise with residents and establish good rapport. A complaint handling procedure will also be put in place.
13.16	Operation	No specific mitigation measures and monitoring measures are proposed for the mitigation of operational noise impacts at off-site sensitive receptors. However, noise levels within the site should be minimised (such as keeping access hatches closed and switching off equipment when not in use), to minimise the exposure site personnel to noise from operational plant.

Reference	Phase	Mitigation and Monitoring
13.17		Long-term monitoring will be undertaken for a period of at least 12 months from the commencement of site operations and again following any subsequent substantive change in site operations. After 12 months. the need for long-term monitoring will be reviewed with the relevant authority
13.18		Short-term attended noise measurements will be taken at or near to the NSLs identified in this chapter. Measurements will be taken and reported in accordance with the guidance provided in NG4. Short-term measurements will take place at the commencement of site operations and again following any subsequent substantive change in site operations. They will then be repeated no less than once a year.
Chapter 14 Th	ne landscape	
14.1	General	The location of the GIS Substations is at +20 m OD and adjacent to the main turbine halls of the adjacent STEP Power Plant. This low position was deliberately selected during the design phase to avail of the screening effect of the elevated terrain (+25 m OD) between the residences along Coast Road L-1010 (VP7, VP8, VP9, VP10 and VP13). This mitigates the visual impact of the GIS Substations on these residences. The benefit of this mitigation is clearly visible from (VP7, VP8, VP9, VP10 and VP13). Additionally, the proposed colour scheme of the façade of the GIS Substations has been selected to match that of the adjacent STEP Power Plant so that the two developments are visually coherent. The STEP Power Plant colour scheme was selected based on the constructed ESB substation near Kilmorna, Co. Kerry, which successfully helped the integration of the built structures into the surrounding landscape in close and distant views, including designated scenic views across the River Feale valley.
14.2		Additional embedded mitigation is indicated on the Landscape Plan in Appendix 14.3. It includes a proposed vegetation strip along the field boundary to the southeast of the proposed GIS Substations, and a proposed hedgerow to the southwest and northwest. No planting is proposed to the northeast as that would be the location of the adjoining BESS of the adjacent STEP Power Plant. The embedded mitigation will help the proposed GIS Substations to 'bed into' the receiving landscape. The proposed vegetation strip will be visible and noticeable from locations to the south of the proposed GIS Substations and will help screen the proposed GIS Substations (VP8).
Chapter 15 A	rchaeology, Architectural a	nd Cultural Heritage
		SLNG will be responsible for the mitigation and monitoring of the proposed development, and all other mitigation relating to the overlapping

15.1	Construction	SLNG will be responsible for the mitigation and monitoring of the proposed development, and all other mitigation relating to the overlapping cultural heritage assets will fall to the various agencies involved in the project design for each of these projects. It is beyond the scope of this study to propose mitigation for schemes where mitigation is already consented or included in 'live' planning application.	
15.2The mitigation proposed is in accordance with the Department's (1999) Framework and Principles for the Pro Heritage, from which the Kerry Council policies and objectives for the protection of archaeological her		The mitigation proposed is in accordance with the Department's (1999) Framework and Principles for the Protection of the Archaeological Heritage, from which the Kerry County Council policies and objectives for the protection of archaeological heritage are derived.	
	Construction	In terms of mitigation, general principles are proposed which include the following:	
15.3		 A full archaeological mitigation strategy to be agreed in consultation with both the Kerry County Council Archaeologist and the NMS post-consent and in advance of any on-site works taking place. Sufficient time will be allowed in programme to undertake early advance works already agreed through consultation with NMS, and the results of any advance works will further inform archaeological mitigation required for the proposed development. 	

Reference	Phase Mitigation and Monitoring					
15.4	 All/any greenfield portions of the proposed development where previously unidentified sites or potential archaeological sites have been noted will be subject to advance works geophysical survey (where suitable, and not precluded by the presence of overhead power linetc). 				nt where previously unidentified sites or potential archaeological sites have been rvey (where suitable, and not precluded by the presence of overhead power lines,	
15.5		 All/any tested b complia where/i NMS. 	greenfield/offline p by a suitably qualifi nce with the releva f required, the scop	ortions of the proposed deve ed archaeologist in consulta ant legislation, policy and gui be of which will be agreed in	elopment that have not been previously subject to archaeological testing will be tion with the Kerry Co. Council Archaeologist and under licence from the NMS in delines. The results of this work will inform further archaeological mitigation advance with the Kerry County Council Archaeologist and in consultation with the	
15.6		 Townlat testing The res 	nd boundaries with of same, under lice ults of this work wi	in the proposed developmen nce by a suitably qualified a Il inform the requirement for	nt area to be subject to townland boundary surveys, including archaeological rchaeologist, in consultation with the Kerry Co. Council Archaeologist and NMS. further archaeological mitigation where necessary.	
15.7	 Architectural heritage surveys of all extant vernacular buildings/structures to be directly or potential directly impacted by the proposed development to be subject to Built Heritage Surveys in accordance with relevant guidance, and in consultation with the Kerry Co. Council Archaeologist. 					
15.7		 That archaeological monitoring confined to areas where advance archaeological works were not feasible will be undertaken by a suitably qualified archaeologist during construction. 				
15.8		That the lectures propose	e results of all arch and to the wider ad development on	aeological works associated public through publications. cultural heritage.	with the proposed development be disseminated both locally (through local These measures will be used to offset the overall Significance of Effect of the	
	Site specific r	nitigation measures:				
	CH Receptor No.	Site Type	Townland	Mitigation Type	Mitigation Details	
15.9	CH001	2 Buildings - including 1 ruin (site of)	Kilpaddoge	Preservation by record	Geophysical Survey followed by archaeological testing, depending on the nature of results of survey.	
15.10	CH002	Building	Farranawana	Preservation by record	Geophysical Survey followed by archaeological testing, depending on the nature of results of survey.	
15.11	CH048	Townland boundary	Kilpaddoge	Preservation by record	Once the construction area is cleared of vegetation in this area a full topographic survey and townland boundary survey will be undertaken to see if anything of a physical boundary survives, with advance works testing to ascertain same. Further mitigation may be required thereafter, depending on the results of surveys and inspection.	
15.12	CH049	Townland boundary	Kilpaddoge	Preservation by record	Advance works townland boundary survey and archaeological testing to ascertain the nature and potential age of the boundary feature within the CPO extents.	

Reference	Phase Mitigation and Monitoring				
					Further archaeological works such as resolution and/or monitoring may also be required.
15.13	CH051	Parallel field boundaries	Kilpaddoge	Preservation by record	Advance works archaeological testing to see what - if anything, of the sub-surface remains of these boundaries survive in situ. Further archaeological works may be required pending the results of testing.
15.14	CH052	Limekiln disused	Kilpaddoge	Preservation by record	Advance works archaeological testing to see what - if anything of the sub-surface remains of the kiln survive below present ground level. Depending on the results of that work, further archaeological mitigation may be required either to resolve, monitor during construction or preserve in situ.
15.15	CH053	Laneway entrance to limekiln	Kilpaddoge	Preservation by record	Advance works archaeological testing to see what - if anything, of the sub-surface remains of this laneway and early field boundary survive within the PAB boundary. Depending on the results of that work, further archaeological mitigation may be required to either resolve, monitor during construction or preserve in situ.
15.16	CH054	Lime kiln disused	Kilpaddoge	Preservation by record	Advance works archaeological testing to see what - if anything, of the sub-surface remains of this kiln survive. Further archaeological works may be required pending the results of testing.
15.17	CH055	Quarry	Kilpaddoge	Preservation by record	Advance works archaeological testing to see what, if any evdence of archaeological activity associated with the quarry or earlier prehistoric features in this area survive sub-surface below present ground level. Further mitigation may be required pending the outcome of testing.
15.18	CH072	Laneway	Kilpaddoge	Preservation by record	Given the potential for this feature to be earlier than 19th century in date, or possibly earlier, a full written and photographic description will be made, followed by advance works archaeological testing to ascertain the nature and date of the feature and its flanking banks at the northern limit of the scheme. Further mitigation may be required pending the results of the advance works testing.
15.19	CH82	Curvilinear feature from aerial imagery	Kilpaddoge	Avoidance	Advance works geophysical survey of the field within which the anomaly occurs, followed by advance works archaeological testing to ascertain what, if any evidence of archaeological activity associated with the quarry or earlier prehistoric features in this area survive sub-surface below present ground level. Further mitigation may be required pending the outcome of testing
15.20	CH105	Ringfort - rath	Kilpaddoge	Avoidance and offsetting	As a precaution, the location of CH105 should be noted in the CEMP to ensure that all construction workers are aware of the location and importance of this monument and to ensure that no impact occurs during construction. The temporary impact on setting during construction may be offset by screening which should be reversible post-construction.

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Reference	Phase	Mitigation	and Monitoring		
12.3	CH106	Souterrain	Kilpaddoge	Avoidance	As a precaution, the location of CH106 should be noted in the CEMP to ensure that all construction workers are aware of the location and importance of this monument and to ensure that no impact occurs during construction. Consultation with NMS to discuss the engineering requirements for vibration monitoring at this Recorded Monument as management for indirect effects.
12.4	CH107	Ringfort - rath	Kilpaddoge	Avoidance and Offsetting	As a precaution, the location of CH107 should be noted in the CEMP to ensure that all construction workers are aware of the location and importance of this monument and to ensure that no impact (accidental or otherwise) occurs during construction. The temporary impact on setting during construction can be offset via public presentations, lectures and dissemination of information on the cultural heritage aspects of this project post-construction.
12.5	CH108	Ringfort - rath	Kilpaddoge	Avoidance and Offsetting	As a precaution the location of CH108 should be noted in the CEMP to ensure that all construction workers are aware of the location and importance of this monument and to ensure that no impact (accidental or otherwise) occurs during construction. Any potential temporary impact on setting during construction can be offset via public presentations, lectures and dissemination of information on the cultural heritage aspects of this project post-construction.
12.6	CH109	Souterrain	Kilpaddoge	Avoidance	As a precaution the location of CH109 should be noted in the CEMP to ensure that all construction workers are aware of the location and importance of this monument and to ensure that no impact (accidental or otherwise) occurs during construction. Consultation with NMS to discuss the conservation engineering requirements for vibration monitoring at this Recorded Monument as management for indirect effects.
12.7	CH133	Area of Archaeological Potential	Coolnanoonagh/Kil paddoge	Preservation by record	Archaeological testing, depending on the nature of results of advance works further archaeological mitigation may be required in consultation and agreement with the NMS and Local Authority Archaeologist.
12.8	CH138	LiDAR anomaly	Kilpaddoge	Preservation by record	Geophysical Survey followed by archaeological testing and/or excavation, depending on the nature of results of survey.
12.9	CH139	LiDAR anomaly	Kilpaddoge	Preservation by record	Geophysical Survey followed by archaeological testing and/or excavation, depending on the nature of results of survey.
12.10					
12.11					
12.12	Construction	Built Service	s		
12.13		Prior to const areas and if r	ruction, confirmatory equired, utilities will t	surveys will be conducted be relocated.	I to identify and reconfirm the location of all utility infrastructure within the works

Reference Phase	Mitigation and Monitoring
12.14	Utilities
12.15	Although it has been determined that the effects identified during the assessment on the existing utilities network in the study area will likely be Not Significant or Imperceptible during the construction phase, the following best practice measures will be implemented by the Contractor during the construction phase:
12.16	 A CEMP has been prepared and is presented within the application documentation. This will be finalised by the Contractor prior to the start of construction.
12.17	 As with any excavations there is a potential to disrupt local underground services. A confirmatory survey of all existing services will be carried out prior to construction to identify the precise locations of any services.
12.18	 The Contractor will be obliged to put measures in place during the construction phase to ensure that there are no interruptions to existing services and all services and utilities are maintained unless this has been agreed in advance with the relevant service provider and local authority. When service suspensions are required during the construction phase, reasonable prior notice will be given to the residents in the area. The disruption to services or outages will be carefully planned so the duration is minimised. The timing of local domestic connections will be addressed between the Contractor and the local community at the detailed design stage.
12.19	 All potential temporary connections will be agreed in advance with the relevant service provider.
12.20	 All utilities work shall be carried out in accordance with the relevant requirements of the respective service providers / authorities (i.e., ESB, GNI, Eirgrid, Virgin Media and any others of relevance). These works will be carried out in a manner that is safe, and which avoids or minimises interruptions of service which might affect local residents and businesses and adjacent development.
12.21	 Works during the construction phase, including service diversions and realignment will be carried out in accordance with relevant guidance documents, including GNI's publication 'Safety advice for working in the vicinity of natural gas pipelines'; the ESB's 'Code of Practice for Avoiding Danger from Overhead Electricity Lines', and the Health and Safety Authorities (HSA) 'Code of Practice for Avoiding Danger from Underground Services'.
16.8	All new infrastructure will be installed in accordance with best practice, applicable standards, guidelines and codes of practice.
16.9	The Proposed Development will incorporate water efficiency measures such as collection of grey water to minimise water consumption as far as possible.
16.10	Prior to the operational phase of the proposed development, utilities infrastructure connections will be tested regularly by a suitably qualified person using an appropriate methodology, approved by the relevant service provider, and under the supervision of the local authority.
16.11	The water supply will be tested to the satisfaction of the local authority and Uisce Éireann prior to the connection to the public potable water.
16.12	Potable water during the operational phase will be regulated and monitored under the Industrial Emissions licence for the STEP Power Plant.
16.13	Routine maintenance will be carried out in accordance with the maintenance procedures provided by the Contractor and manufacturer.
	Waste Management
16.14	A Construction Resource Waste Management Plan (as part of the Construction and Environmental Management Plan (CEMP)) is included with the application documentation. Waste arisings will be handled, stored, managed and re-used or recycled as close as practicable to the

Reference Phase	Mitigation and Monitoring
	point of origin. The closest landfill facility is located in Tralee, Co. Kerry (North Kerry Landfill Site). There is a waste and recycling centre at Ballyhahill, Co. Limerick.
16.15	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).
16.16	Wastes will be 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 accordance with the Waste Management Act 1996 and associated amendments and regulations and in a manner which will not adversely affect the environment. All employees will be made aware of their obligations under the CEMP and CRWMP.
16.17	The CEMP and CRWMP will be available for inspection at all reasonable times for examination by the Local Authority.
16.18	The portable chemical toilets provided for the duration of construction works and all waste material will be removed from site and disposed of to an appropriately licensed facility.
16.19	Excavated material from ground preparation works will be either reused onsite if suitable or otherwise disposed of offsite at a suitably licenced facility.
16.20	Any excess spoil material will be removed from site by a dumper or suitable lorry and will be treated if required before being disposed of appropriately in a licensed facility.
16.21	All waste oil, empty oil containers and other hazardous wastes will be disposed of in conjunction with the requirements of the Waste Management Acts 1996, as amended.
16.22	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, as amended and associated Regulations.
16.23	Wastes sent offsite 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.
16.24	The Contractor will be obliged to aim for an overall recycling rate of 70% of construction and demolition waste, in accordance with EU targets under the Waste Framework Directive (2008/98/EC).
16.25	All employees will be made aware of their obligations under the CEMP. The CEMP will be available for inspection at all reasonable times for examination by the Local Authorities.
Operation	Built Services
16.26	Service disruptions will be kept to a minimum, only occurring where unavoidable. Should any works be required along the underground cable route, prior notification of disruptions will be given to all those affected. This will include information on when disruptions are scheduled to occur and the duration of the disruption. Consultation with relevant neighbouring parties will be undertaken prior to any proposed disruptions
	Waste Management
16.27	All waste generated during the operational phase will be managed in accordance with the relevant provisions of the Waste Management Act 1996 and associated amendments and regulations, particularly with regard to the use of appropriately permitted waste contractors and

Reference	Phase	Mitigation and Monitoring
		appropriately authorised destinations for waste materials. Waste generated by staff during the operational phase is considered to be minimal.
Chapter 17 R	oads and Traffic	
17.1	Construction	The temporary effects of construction, regardless of the assessed level of significance, will be mitigated through adoption of a regulated and approved Construction Traffic Management Plan (CTMP).
17.2		The general purpose of a CTMP is optimise the efficiency and safety of all traffic activities generated by the proposed development and thus maintain suitable amenity and safety for local communities and other roads users.
17.3		A summary of key CTMP mitigation elements follow and the CTMP is provided in full form in the CEMP which is included in the application documentation:
17.4		 The appointed contractor will agree temporary traffic management measures then adopt and monitor an appropriate way of working in consultation with Kerry County Council, the appointed contractor, TII and/or their Agents and An Garda Siochána as appropriate.
17.5		 The CTMP has been developed for the purposes of this assessment and will be further developed as necessary in consultation with Kerry County Council and the Gardai prior to construction commencing. The CTMP will document measures to promote the efficient transportation of components and materials to site, whilst reducing congestion and disruption which might impact negatively on local communities or general traffic and in particular the emergency services. The CTMP is a 'live' document and will be developed accordingly, within the parameters assessed in this EIAR.
17.6		 During the construction phase, signage will be installed to warn road and recreational route users to the presence of the works access and the associated likely presence of large or slow-moving construction traffic.
17.7		 Construction traffic timing will be agreed with KCC in advance to avoid coinciding with the peak time associated with Tarbert Comprehensive School.
17.8		Car sharing will be promoted to construction personnel by the contractor during the induction process.
17.9		 The appointed contractor will employ a number of sub-contractors, and all will fall under the umbrella of the CTMP and will have an obligation to adhere to the Plan; this obligation will form part of the procurement process and will be written into any contract of employment.
17.10		 Compliance will be monitored by the Project Manager, on behalf of the appointed contractor, via spot checks to ensure that vehicles follow the measures set out in the CTMP and recording of any complaints. The appointed contractor will be required to stipulate that all contractors disseminate these rules to their sub-contractors.
17.11		 In liaison with ESBN, the appointed contractors will be required to maintain close liaison with local community representatives, landowners and statutory consultees throughout the construction period. This will include circulation of information about ongoing activities; particularly those that could potentially cause disturbance, including due to traffic.
17.12		• The appointed contractor will nominate a person to be responsible for the co-ordination of all elements of Roads and Traffic during the construction process (Liaison Officer). This person will liaise with the local community so that the community has a direct point of

Reference	Phase	Mitigation and Monitoring
		contact within the developer organisation who they could contact for information purposes or to discuss matters pertaining to traffic management or site operation.
17.13		 If the construction phase of any notably sized development(s) appears likely to overlap with the proposed development, the appointed contractor will seek to liaise with the appropriate developer organisation regarding the scheduling of deliveries to identify potential means of reducing the effects of combined construction.
17.14		 Prior to commencement of construction, and during the construction phase, engagement with the proponents of other developments will continue and where there is potential for works to be carried out in parallel, appropriate mitigation measures will be implemented including the scheduling of works and regular liaison meetings between project teams to ensure that plans are co-ordinated and impacts on traffic are minimised. The specific detail will be developed by the appointed contractor within the parameters assessed in this EIAR.
Construction	n Traffic Management Pla	an (CMTP)
	Construction	General
17.15		Road sections in the study area have been reviewed with the principal aim being to minimise potential disruption to local communities, and general traffic. There are a range of traffic management measures proposed to minimise potentially disruptive impacts associated with construction works and construction traffic. These measures are hereafter described.
		Time Control
17.16		Construction working hours will be conditionally defined through planning agreement or road opening license. Normal working hours are expected to be Monday to Friday 07:30 to 18:00 and 08.00 to 14.00 on Saturday and no works will take place on Sundays or Bank Holidays Construction will occur during normal construction working hours.
17.17		Construction traffic times will be agreed with KCC in advance to avoid coinciding with the peak time associated with Tarbert Comprehensive School. i.e. Construction personnel traffic will be avoided between 08:30 and 09:15.
17.18		No HGV traffic will be allowed pass the existing school on the L-1010 at Tarbert for 20 minutes before and 10 minutes after the opening and closing times of the school. The elimination of passing HGV traffic during these time periods will ensure the continued safe delivery and collection of children at the school.
17.19		In instances where extended hours / days are required works will only be undertaken with prior agreement with the relevant statutory authority.
17.20		The appointed contractor will plan and manage construction works activities to minimise potential disruption on the surrounding road network and any other detrimental impact to the local community.
17.21		The appointed contractor will liaise with KCC upon finalisation of the construction programme to ensure (as far as is reasonably practicable) that no conflict with planned road works in the vicinity of any construction works occurs so as not to impact motorists further.
17.22		Deliveries will be scheduled, as far as is reasonably practicable, to avoid network peak hours and passing by schools around typical drop-off and pick-up times. Where practically achievable, diversion routes will not apply outside of the compound's hours of operation.
17.23		Accordingly, the appointed contractor will discuss and agree with KCC on times to be avoided at schools and other community receptors at peak periods of the construction programme to minimise disruption.

Reference Phase	Mitigation and Monitoring
17.24	The appointed contractor will liaise with KCC regarding local events dates and seek to avoid traversing affected route sections at agreed times.
	Transportation Protocol
17.25	All Contractors will adhere to the agreed CTMP and any relevant conditions of approval imposed by KCC.
17.26	All construction vehicles associated with the proposed development will:
17.27	• display a unique identification number shown on a plate clearly visible.
17.28	be securely sealed.
17.29	record origin, destination, and route of the vehicle.
17.30	display and ensure vehicle identifications including registration plates are clearly visible.
17.31	Drivers of all construction vehicles will:
17.32	 access their destination worksite via an approved route; this is to be determined by the approved Contractor in conjunction with the administering local authority.
17.33	observe speed limits.
17.34	• drive in a safe and courteous manner with due care and consideration for other road users both vehicular and pedestrians.
17.35	adhere to the hours of operation detailed by the TMP.
17.36	not deliberately wait or stack on any public road.
17.37	The appointed Contractor will maintain a management system whereby the following records are retained and made available on request to KCC:
17.38	the number of vehicles arriving and leaving their destination.
17.39	all complaints received regarding transport and resultant action taken.
17.40	all instances where a protocol has been breached and resultant action taken.
17.41	The Client will supply the following information to KCC, which will be treated in confidence:
17.42	action to be taken when a protocol is breached; and
17.43	a log of vehicle movements.
	Road Cleaning/Sweeping
17.44	To reduce the potential for debris being deposited onto the local road network in the road sections/compound areas, the appointed contractor will ensure that public roads and footways are cleaned and swept during and after the works. This cleansing regime will minimise the amount of deleterious material deposited on the road surface. The appointed contractor will ensure that the nearest public road will be kept clear of debris by monitoring and then utilising a road sweeper where necessary.

Reference Phase	Mitigation and Monitoring
	Speed Restrictions
17.45	All construction workers, including contractor managed HGV drivers, will be briefed on the absolute requirement to adhere to posted speed limits on public roads through induction sessions and through regular briefings (toolbox talks). Other parties responsible for site deliveries will also be instructed per the requirement for compliance with posted speed limits on all roads.
17.46	Speed limits posted within compounds will be considered mandatory and, therefore will be complied with.
	Temporary Signage
17.47	During the construction phase, signage will be installed to warn road users to the presence of the works access and the associated likely presence of large or slow-moving construction traffic.
17.48	General information signage will be installed to inform road users and local communities of the nature and location of the works, including contact details should they require additional information.
17.49	Temporary signage arrangements will be formally agreed with KCC prior to installation and commencement of construction. All signing will also be provided in accordance with the Traffic Signs Manual.
17.50	Prior to installation, all signs and devices will be checked to confirm that they are in good condition and meet the following requirements:
17.51	 Items that are bent, broken or have surface damage shall not be used.
17.52	 Items will be free from accumulated dirt, road grime or other contamination.
17.53	Fluorescent signs which colour has faded to a point where they have lost their daylight impact will be replaced.
17.54	 All sign faces are to be of retro-reflective material and the retro-reflectivity, colours, chromaticity, and luminance factors will be as specified in the Specification TS4 or any further amendments or replacement.
17.55	All signs will be positioned and erected such that:
17.56	They are properly displayed and securely mounted.
17.57	• They are within the driver's line of sight.
17.58	They will not be obscured from view.
17.59	They will not obscure other devices from the driver's line of sight.
17.60	They will not become a possible hazard to workers or vehicles.
17.61	They will not deflect traffic into an undesirable path.
17.62	Signs and devices that are erected before they are required shall be covered by a suitable opaque material
	Temporary Traffic Management
17.63	The construction worksite requirements in conjunction with existing road corridor geometry on the L-1010 necessitates that localised lane closures will be required.

Mitigation and Monitoring
Temporary traffic management may include:
• Single alternate lane operation controlled by temporary traffic signals on two lane single carriageway sections; or
Single alternate lane operation manually controlled using stop/go signs.
Public Transport
The appointed contractor will discuss with KCC and local bus operators regarding matters that could affect the flow of buses and, will implement reasonable and practically achievable measures to mitigate any disruption to bus services and inconvenience to service users.
Pedestrian, Cyclist or Equestrian Routes
Appropriate signage advising of dates and hours of working will be installed on the pedestrian, cyclist, and recreational routes, among others, in advance of road crossing points to warn users of construction traffic.
The exact details and location of the signage would be agreed with KCC.
Parking for Vehicles of Construction Workers, Operatives and Visitors
To avoid detriment associated with obstructive parking, adequate car parking space for permanent construction workers, visitors and deliveries will be provided within the site compound. Car parking will not be permitted on any public road network adjacent to the site to minimise the potential for obstruction and delay for other road users. The requirement for construction workers not to park their private vehicles on public roads will be a mandated and advised to all construction workers prior to commencement of works and reinforced via 'toolbox talks'.
Vehicle sharing will be promoted to construction workers by the contractor during the induction process.
CTMP Implementation and Monitoring
General
The implementation and monitoring of the CTMP will be the responsibility of the appointed Contractor. Further evolution of this CTMP will be required during the detailed proposed development planning stages and potentially during the construction phase.
The appointed Contractor may employ several sub-contractors, and in such circumstances sub-contractors' traffic related activities will fall under the requirements of the CTMP and therefore sub-contractor personnel and sub-contractor managed construction vehicle drivers will have an obligation to adhere to the CTMP. This obligation will form part of the procurement process and will be written into any relevant employment or commissioning contract.
Compliance will be monitored by the Contractor's Project Manager, to ensure that vehicles follow the measures set out in the CTMP and to record any complaints arising.
Non-compliance with the CTMP will constitute a breach of contract, and action will be taken against the Contractor should repeated non- compliance continue. Details of the proposed monitoring and enforcement regime will be supplied to KCC upon request.
Responsibilities
The appointed Contractor will nominate a person responsible for the co-ordination of all elements of traffic and transport, except community liaison during the construction process, a nominated Liaison Officer.

Reference Phase	Mitigation and Monitoring
17.77	The Client will appoint a Community Liaison Contact. The Community Liaison Contact will be the direct point of contact for the developer organisation with the local community. Accordingly, local residents and business holders can contact the Community Liaison Contact for general information purposes or to discuss specific matters pertaining to traffic management or site operation.
17.78	The Community Liaison Contact will regularly liaise with the nominated Liaison Officer. Contact details for the Liaison Officer and Community Liaison Contact will be made available to relevant parties and more generally to the local community prior to commencement of works on- site.
17.79	The appointed Contractor (or their appointed agent) will review the number of site personnel, traffic numbers, and the construction programme as the proposed development progresses. Any proposed or unplanned substantive changes will be discussed and agreed with KCC as far as is reasonably practicable.
17.80	As necessary, meetings will be held by the appointed Contractor with KCC to discuss the CTMP including any relevant issues raised by the local community.
	Transport Co-ordination
17.81	The appointed Contractor will be responsible for the co-ordination of all elements of HGV transport to and from the worksites. The appointed Contractor (or their appointed agents) will be responsible for co-ordination and liaison with sub-contractors, KCC, TII and emergency services. The Client will be responsible for co-ordination and liaison with the local community.
17.82	The Liaison Officer will inform KCC (or agents thereof) of any important matters that could affect traffic movement by means of reports issued at regular intervals or by day-to-day reports of any substantial, essential changes to transport plans necessitated by circumstances.
	Communication and Consultation
17.83	As set out in Section 4.2, the Client will nominate a Community Liaison Contact to act as a point of contact with the local community. The Community Liaison Contact will be responsible for keeping the local community informed of progress on the site and warning them of upcoming activities which could give rise to increased construction vehicle movements. The Community Liaison Contact will work in tandem with the appointed Contractor's Liaison Officer.
17.84	The Community Liaison Contact will be able to attend community meetings to provide a report and to be on hand to answer any questions that the local community may have. Contact details will be provided for the Community Liaison Contact (telephone number and email address) and will be made available locally so that members of the public have an opportunity to ask questions and provide feedback.
17.85	The appointed Contractor will utilise local media channels to circulate information regarding traffic management where necessary.
17.86	Signs will be erected on fences surrounding the construction compound to provide contact details of the appointed Contractor's Project Manager. These contact details will also be provided directly to the emergency services.
	Liaison with Other Developers/Contractors
17.87	It is recognised that the construction phase, associated with the proposed development, could coincide with the construction of other proposed developments, whereby construction related traffic will utilise sections of the same public roads.
17.88	If the construction phase of any notably sized development(s) appears likely to overlap with the proposed development, the appointed Contractor will seek to liaise with the appropriate developer organisation regarding the scheduling of deliveries to identify potential means of reducing the effects of combined construction.

Reference Phase	Mitigation and Monitoring	
17.89	Prior to commencement of construction, and during the construction phase, engagement with the proponents of other developments (including Transport Infrastructure Ireland, ESB, Eirgrid, Uisce Eireann and KCC) will continue and where there is potential for works to be carried out in parallel, appropriate mitigation measures will be implemented including the scheduling of works and regular liaison meetings between project teams to ensure that plans are co-ordinated and impacts on population and human health are minimised. The specific deta will be developed by the appointed contractor within the parameters assessed in the EIAR.	
	CTMP Review	
17.90	The CTMP, as a 'live document', will be reviewed on a regular basis by the appointed Contractor prior to and during the construction phase of the proposed development and will be developed accordingly within the parameters assessed in the EIAR. The CTMP will be subject to change during the proposed development's evolution which will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation, which in some cases changes may require approval by KCC.	

Table 4.2: Additional Mitigation and Monitoring Measures proposed within the AA/NIS

Reference	Mitigation and Monitoring
	Pre-Construction Confirmatory Surveys
NIS 1	In advance of enabling works, the Contractor's ECoW will conduct confirmatory otter surveys in advance of the commencement of any works within 150m of the works areas (where access is available) as per Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. This will allow for the identification of any holts have been established prior to commencement of works. The confirmatory otter survey will be conducted no more than 10-12 months prior to construction commencing. Otter surveys will be carried out having regard to guidance of NRA (2006, 2009).
NIS 2	The results of pre-construction confirmatory surveys will inform the refinement of mitigation measures (if required) in Contractor method statements, and all results will be incorporated into Contractor's constraint mapping.
NIS 3	Survey reporting and mapping will also be provided to the Employer's Representative team, and to local authority or other parties where required by conditions.
	Ecological Supervision and Monitoring
NIS 4	An ECoW will be employed by the Contractor to oversee implementation of mitigation. This will include monitoring and auditing the works and contractor programmes and works method statements, to ensure mitigation is correctly implemented.
NIS 5	The ECoW will have demonstrable experience in ecological supervision.
NIS 6	The Contractor's ECoW will also ensure any disturbance licenses are arranged based on relevant details outlined in this NIS and any significant findings of confirmatory pre-construction surveys outlined above. The Contractor's ECoW will advise on mitigation measures implementation including the scheduling of works and will be included in regular liaison meetings between project teams to ensure that plans are co-ordinated, and effects are minimised.
NIS 7	All monitoring reports and licensing documentation will be provided to the Employer's Representative team, and to local authority or other parties where required by condition.

Reference	Mitigation and Monitoring					
	Measure	How the measures will avoid / prevent / reduce impacts	Confidence in the likely success of the measure	Timescale for Implementation	Monitoring requirements	How the measures will avoid / prevent / reduce impacts
NIS 8	 At a minimum, all pollution control measures will be designed, installed, and maintained in accordance with measures outlined below and under the supervision of the Contractor's Environmental Clerk of Works (EnCoW). Concrete The pouring of concrete will be required during the construction phase. To prevent the runoff of concrete into nearby watercourses and drains, the following will be implemented. No on-site batching will be permitted at the proposed works areas. Concrete will instead be transported to the site within a concrete truck. Quick setting concrete mixes will be used to reduce the risk of contaminated run-off to the nearby watercourses. Concrete trucks will be washed down in a sealed mortar bin / skip which has been examined in advance for any defects. This requirement will be communicated to each concrete truck driver prior to entering into the works area. Where concrete pours are to take place instream they will only take place within an isolated, dry, works area. Where the isolated working area requires constant pumping to maintain a dry works area, pumps shall be turned off during the pour, and remain off until concrete has hardening negating a run-off risk. The Contractor's EnCoW will ensure that covers are available for freshly poured concrete slurry will be allowed to dry and taken to a licensed waste depot for disposal. The Contractor will schedule concrete works during relatively dry weather conditions (i.e. when there are no active Met Eireann yellow, orange or red warnings) to reduce the elevated risk of runoff. The Contractor's EnCoW will notify the Employer's Representative Toam the NBWS and UEL immediately of ava coverte active intervented in the proposed to the site works during relatively dry weather conditions (i.e. when there are no active Met Eireann yellow, orange or red warnings) to reduce the elevated risk of runoff. 	reduce impacts Measures will preven the uncontrolled releases of pollutants into the environment.	ntMeasures prescribed as standard best s practice and are aligned with CIRIA Guidelines C532	Pollution prevention measures will need to be in place before the enabling and construction works commence at each location.	The Contractor's DEnCoW will carry out eongoing monitoring of all pollution control measures. The Contractor EnCoW will report monitoring findings, and adaptive management actions taken in writing to the independent EnCoW within the Employer's Representative Team and any statutory bodies in compliance with planning conditions.	reduce impacts Measures will prevent and/or remedy the funcontrolled releases of pollutants into the environment.

Reference	Mitigation and Monitoring				
	Where mobile equipment is required e.g. generators, these will be housed in a suitably sized bund / plant nappy such that any leaks / spills are intercepted. All mobile equipment used will be stored within a plant nappy. Operators will regularly inspect the plant nappy, at a minimum on a daily basis, and replace it where it has become contaminated.				
	Fuelling and lubrication of plant and equipment will be restricted to the construction compound sites, or laydown areas.				
	All waste fuels, oils, and other hazardous wastes will be disposed of in accordance with the requirements of waste legislation.				
	Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained during induction to site by the Contractor's EnCoW in the use of this equipment.				
	Should use of a spill-kit be required it shall be immediately re-stocked by the Contractor.				
	All spill-kits shall be inspected on a weekly basis by the SHEQ officer to ensure they are maintained as fit for purpose. Records relating to these inspections shall be kept.				
	Welfare / hygiene facilities will be located within the construction compounds.				
	Should one be required, any water from any wheel washes will be removed from site and disposed of in line with Waste Legislation. No wheel wash water will be discharged into any watercourses or drainage ditches.				
	Mitigation Proposed for Watercourse Crossings				
	Measure	Confidence in the likely success of the measure	Timescale for Implementation	Monitoring requirements	How the measures will avoid / prevent / reduce impacts

		modouro			.ouuoopuoto
NIS 9	Prior to the works commencing, the measures prescribed in this section shall be installed to prevent the downstream transportation of surface water run off associated with vegetation clearance. This may be through the use of features like hay bales. Monitoring of these measures to ensure their continued effectiveness will take place on an on-going basis while the works are proceeding.	Measures prescribed as best practice and are proven technologies / methods.	Pollution prevention measures will need t be in place before the construction works commence	The Contractor's DEnCoW will carry out edaily monitoring of all pollution control measures including	Measures will ensure all adverse effects associated watercourse crossings are
	The clearance of any riparian vegetation will be avoided / or kept to the minimum required for the facilitation of the works such that no unnecessary exposure of riverbanks occurs.			monitoring of pollution control	avoided is silt
	The Contractor's EnCoW shall direct the Contractor to take any corrective actions required. The Contractor will record all works authorisations, report these to the independent EnCoW within the Employers Representative Team, and maintain on file for inspection as required.			measures such as sil fencing and compliance with restricted areas.	

Reference Mitigation and Monitoring

Where the implementation of these measures fail, or are inadequate, the Contractor will implement adapted measures (for example replacement sediment treatment system) in agreement with the Contractor' s EnCoW and the Employers Representative Team.

The Inland Fisheries Ireland (IFI) Biosecurity Protocol for Field Survey Works will be complied with.

Unless otherwise agreed with IFI, any element of the works requiring instream works will be restricted to the fisheries open season (i.e. restricted to July to September inclusive).

Where trenching (instream) works are proposed, electrofishing may be required to remove fish under licence from IFI. Method statements will be developed in agreement with the Employer's Representative and with IFI for the works.

Open Cut Water Crossing

Open cut works will be carried out within a dry works area.

The dry works area will be isolated by installing an impermeable barrier between the watercourse and the works area. The impermeable barrier will be tailored to the watercourse in question. Techniques include the use of inflatable dams, frame dams or, in smaller watercourses, sandbags (double-bagged and underfilled, containing only clean washed sand).

Water pumped from the dry works area will be treated using settlement tanks to remove sediment prior to discharge back to the watercourse. In consultation with Inland Fisheries Ireland (IFI), greater filtration of silt may be achieved prior to discharge, through proposed use of silt dewatering bags which trap silt and expel only clean water and can be left to biodegrade on riverbanks as a habitat enhancement measure.

Water will be conveyed over the isolated section of channel by pumping or the use of a temporary diversion. Where sufficient capacity is available, and there is no risk of excessive scour, the diversion will be within the footprint of the existing channel.

Following open trenching site restoration works will be carried out following completion of the crossing, in agreement with IFI. These works may include riverbank stabilization, gravel replacements etc. In all cases, the site will be restored post installation.

Open cut trenching works will not be carried out during extreme rainfall or high flow events. Met Éireann provides a 5-day weather forecast via its website (www.met.ie) and works will not take place at least during yellow, orange and red weather warnings. The Contractor's Environmental Clerk of Works (EnCOW) will monitor this daily and will provide reports for audit.

A full-time on-site Environmental Clerk of Works (EnCoW) will be appointed prior to commencement of works.

Silt fences will be installed downslope of the area where silt is being generated on disturbed ground as follows:

The Contractor EnCoW will report monitoring findings, and adaptive management actions taken in writing to the Employer's Representative Team and any statutory bodies in compliance with planning conditions.

Reference	Mitigation and Monitoring					
	 To be effective the silt curtain must contain the area where silt is general terminate on high ground (i.e. an elevated area not in the watercourse). 	ted and must				
	 Silt fences will be constructed using a permeable filter fabric (e.g. Hy Tex Terrastop Premium silt fence or similar) and not a mesh. 					
	 The base of the silt fence will be bedded at least 15-30 cm into the ground at 2 metre intervals. 					
	 Once installed the silt fence will be inspected regularly, daily during the p weekly on completion of the works for at least one month, but particularly 	proposed works, y after heavy rains.				
	• The integrity of the silt fencing will be checked daily by the EnCoW and a conditions (rain or wind) and any failures rectified immediately.	after poor weather				
	• Two lines of silt curtain / fence will be installed, where considered neces	sary, by the EnCoW.				
	 Any build-up of sediment along the fence boundary will be removed daily 	<i>y</i> .				
	 Silt fences will be maintained until vegetation on the disturbed ground ha instatement method statements will be subject to approval by the EnCoV 	as re-established. Re- V.				
	 The silt fencing must be left in place until the works are completed (which any temporary ground treatment). 	h includes removal of				
	Silt fences will not be removed during heavy rainfall.					
	• The silt fence will not be pulled from the ground but cutaway at ground level and posts removed.					
	Mitigation Against Disturbance to Wintering Birds					
	Measure	Confidence in the Timescale for likely success of Implementation the measure	Monitoring requirements	How the measures will avoid / prevent / reduce impacts		
NIS 10	• All plant used during the construction phase shall be the quietest of its type practical for achieving the works, as demonstrated in writing by the Contractor to the local authority, with reference to other noisier models.	Measures prescribedSound reductionas standard besthoarding will needpractice and areto be in place	The Contractor's EnCoW will carry out daily	Measures will ensure any adverse effects associated with noise disturbance are avoided.		
	 All plant shall be operated and maintained in accordance with the manufacturer's recommendations including the use and maintenance of the specific noise reduction measures in the next bullet. 	proven technologies / before the methods (sound construction works hoarding and noise commence.	monitoring of noise reduction measures (i.e.			
	• The following will be incorporated to reduce the impact further:	are used generally to plant specific	hoarding).			
	 The use of mufflers on pneumatic tools 	reduce noise impacts noise reduction to	The Contractor's			
	 Effective exhaust silencers 	on projects). take place on an	EnCoW will report			
	 Sound reducing enclosures 	ongoing basis.	monitoring findings,			

Reference Mitigation and Monitoring

Machines in intermittent use shall be shut down during periods where they	and adaptive
are not required	management actions
	taken in writing to the
	Employer's
	Representative
	Team, and any
	statutory bodies in
	compliance with
	planning conditions.

5 Environmental Incident Response Plan

5.1 Introduction

In the unlikely event of an incident, the Environmental Incident Response Plan will ensure that any incident is dealt with effectively, and that the response is timely and appropriate. This plan will be further developed by the appointed Contractor, in line with the mitigation measures detailed in the EIAR and NIS for the proposed development, to describe the procedures, lines of authority and processes that will be followed to ensure that all incident response efforts are prompt, efficient and appropriate to the particular incident.

5.2 Plan Objectives

The objectives of the plan are:

- To ensure the health and safety of all workers on site
- To minimise environmental effects
- To devise response procedures
- To establish procedures for an effective response to the incident which minimises effects on the environment and the health and wellbeing of personnel.

5.3 Implementation of the Plan

Risks and appropriate responses for incidents will be reviewed and updated regularly to ensure that all risks and response mechanisms are included within the plan. It will identify the risks associated with health and safety and the environment and will evolve throughout the project lifecycle, with inputs from the contractor/PSCS and sub-contractors.

5.4 Environmental Emergency Response Procedures

The mitigation measures specified in the EIAR and NIS will minimise / avoid environmental pollution. However, procedures must be in place in the unlikely event of an incident. The following are required to ensure that the project / site / activity risks are known to all personnel on site:

- Identify all activities related to the project which have the potential to cause an incident;
- Conduct a risk assessment for each activity;
- Ensure effective planning of the works and the required equipment to deliver EIAR mitigation requirements;
- Contact details for those contacts detailed in section 5.5 to be distributed to personnel and displayed on site; and
- Training of staff/personnel in relation to response procedures, including drills.

In the unlikely event of an incident, the response will follow the following steps:

Figure 5.1: Incident Response Procedure

1	Identification of the incident
\sum_{2}	Contact Site Manager/Supervisor, Contractor's EnCoW, and independent EnCoW in Employer's Representative Team
\mathbf{Y}_{3}	Ensure all personnel are safe
\bigvee_{4}	Put in place containment measures
\bigvee_{5}	Remove the contamination
\mathbf{Y}	Assess the potential of environmental effects and the scale of the incident
\mathbf{Y}	Notify the relevant authorities and the client

An example of emergency response actions required, in the event of a spillage is as follows:

- 1. If safe, stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- 2. If safe, contain the spill using the absorbent spills material provided. Do not spread or flush away the spill.
- 3. Cover or bund off any vulnerable areas where appropriate.
- 4. If possible, clean up as much as possible using the absorbent spills materials.
- 5. Do not hose the spillage down or use any detergents.
- 6. Contain any used absorbent material in weather tight containers bins/bags so that further contamination is limited.
- 7. Notify the Site Manager so that used absorbent material can be disposed of using a licensed Waste Contractor, and
- 8. An accident investigation should be performed in accordance with procedures and the report sent to the Site Manager.

All works in the vicinity of the incident must be ceased until such a time as the Site Manager notifies personnel that it is safe to proceed with the works. The Contractor's EnCoW will be responsible for formulating any corrective actions that are required (e.g. repairs silt fencing in the event of damage from extreme weather) in consultation with the Contractor and relevant stakeholders.

For each incident, the following will be reported:

- Location of the incident;
- Time and Date;
- Scale of the incident;
- Nature of the incident and source-pathway and receptor;
- Remediation measures undertaken;
- Name of the personnel who reported the incident; and
- Any other relevant details.

The Site Manager will keep a log of all environmental incidents on file, and these will be made available to the Local Authority, the independent EnCoW within the Employer's Representative Team and other agencies, as required, such as the Inland Fisheries Ireland or the Environmental Protection Agency.

5.5 Emergency Contact List

An emergency contact list will be displayed at prominent and suitable locations at construction sites during the proposed works. An example is provided in Table 5.1, and this will be further developed to include contact details for key personnel with environmental responsibilities, as detailed in Chapter 2 of this CEMP.

Table 5.1: Emergency	Services and A	Authorities	Contact Details
----------------------	----------------	-------------	-----------------

Emergency Service	Contact Telephone Number
Ambulance	999 or 112
Hospital – Ratass, Tralee, County Kerry	0667184000
Fire Services	999 or 112
Kerry County Council Building Control Department	066 71 23 111
Kerry County Council Environment Department	066 7162000
Kerry County Council, Roads, Transportation and Marine Division	066 7183588
Inland Fisheries Ireland (Limerick)	0818 34 74 24 (353 61 300 238)
National Parks and Wildlife Services (South West)	01 888 2000/ 064 669 1700
Environmental Protection Agency	053 916 0600/056 779 6700
National Monuments Services	085 8049231
ESB Emergency	1850 372 999
Bord Gais Emergency	1850 20 50 50
Uisce Eireann Emergency (formerly Irish Water)	1850 278 278
Irish Rail	01 8555454
Health and Safety Authority	0818 289 389

6 Training and Auditing

6.1 Environmental Induction and Awareness Training

All site personnel will receive environmental induction and awareness training in conjunction with site safety training. The environmental training and awareness training will ensure that staff are familiar with the principles of the CEMP, the environmental aspects and potential impacts associated with their activities, the controls in place to mitigate said impacts. Prior to working in areas of particular sensitivity, the Contractors' EnCoW will give a toolbox talk to site personnel. All site personnel will be trained in relation to incident response procedures and drills will be undertaken to ensure timely and effective responses to incidences.

All signed training records will be held on site for future inspection.

6.2 CEMP Reviews and Auditing

Internal and external auditing will facilitate the assessment of the effectiveness of the CEMP and compliance against regulatory and legislative requirements. Audit reports will be produced identifying examples of good practice, opportunities for improvement, non-conformances, and corrective actions taken, as appropriate. Recommendations for follow-up audits will also be provided. The findings of the audits will be reported to the Site Manager, the Contractors and the independent EnCoW within the Employer's Representative Team.

Internally, the Contractors' EnCoW will bring any changes required to the CEMP to the attention of the Contractor. A report on each change to the CEMP will be appended to the CEMP. The Contractors' EnCoW will monitor and track any changes in environmental legislation and any changes required will be brought to the attention of the Site Manager and Contractor. Changes to the CEMP may also arise due to changes in activities and measures contained in the CEMP may need to be updated / altered to take account of this.

Externally, the independent EnCoW within the Employer's Representative Team will carry out regular reviews of the CEMP to ensure that the Contractors are conducting the works in compliance with the EIAR, NIS and any conditions imposed by the Consenting Authorities.

The CEMP, environmental inspection reports and audit records will be maintained in hard copy and electronic formats for inspection.
7 Communication and Complaints

7.1 Communication and Engagement

Communication with the public and other stakeholders will be a two-way mechanism, to ensure awareness of the project and to share information. The Contractor will share important information with the public and other stakeholders.

The communication strategy will include:

- List of environmental stakeholders
- Road users the Contractor will ensure that traffic disruption is minimised during construction.
- Local population the Contractor will provide the local population and other stakeholders with advance notice of works in the area,
- Method and frequency of communication this can include personal contact, letter drops, emails, telephone, meetings/presentations
- Details of key contacts Employer, Site Manager, Contractors' EnCoW
- Details of the consultation register a record will be maintained of all third-party communication and consultation. This includes consultation with statutory and non-statutory organisations, and members of the public.

The Contractors' Community Liaison Team will be expected to interface with the Employer's Community Liaison Team to ensure the successful delivery of the project in so far as communities are concerned.

7.2 Environmental Complaints

A formal complaints procedure will be developed and implemented by the Contractor.

Signage will be provided at site entrances or on perimeter hoarding locations showing details of whom to contact in the event of a complaint.

The Contractor will:

- Assess what corrective and preventive action is required.
- Carry out further investigation if necessary.
- Provide a response within a reasonable timescale.
- Notify the relevant stakeholder of the proposed corrective and preventive actions to be adopted.
- On completion of the corrective action and following agreement that the complaint has been adequately addressed; the Site Manager will close the case and record the date of closure. The complaints register will include details of the preventative measures undertaken to avoid a reoccurrence and will be agreed with the Contractor's EnCoW.

The Contractor will additionally communicate the specifics of any environmental complaint to New Fortress Energy.

A. Appendix A – Construction Resource Waste Management Plan



Shannon Technology and Energy Park (STEP) 220kV Grid Connection

Construction Resource Waste Management Plan

July 2024

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Shannon Technology and Energy Park (STEP) 220kV Grid Connection

Construction Resource Waste Management Plan

July 2024

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1 Introduction

1.1 Purpose of this CRWMP

This Construction Resource Waste Management Plan (CRWMP) has been prepared for the Shannon Technology and Energy Park 220kV Grid connection that includes development of two new substations and a grid connection. The grid connection is between the proposed Shannon Technology and Energy Park (STEP) Power Plant located between Tarbert and Ballylongford, Co. Kerry and the existing line cable interface mast adjacent to the existing 220 kV KV substation at Kilpaddoge Co. Kerry. Further information on the proposed development is detailed in Chapter 5 Description of the Development. This CRWMP has been developed in accordance with waste management guidance and principles as outlined in Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021) .

1

This CRWMP will evolve in agreement with the planning authorities, in the context of matters such as Conditions of the Statutory Approval, and as detailed design of the development emerges, to ensure that optimum levels of waste prevention, reduction, re-use, recycling, and recovery are achieved throughout the duration of the Proposed Development. Litter management will also be included.

The requirement to develop, maintain and operate this CRWMP will form part of the contract documents for the project and will be updated by the appointed Contractor(s) in advance of the commencement of construction activities on site. The CRWMP will form part of the contractors Constructions Environmental Management Plan (CEMP). 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 this CRWMP.

On commencement of the project, the Contractor appointed to undertake the works will be responsible for the further development of this CRWMP and the implementation of all necessary protocols and measures to ensure regulatory compliance, including the provision of data to the local authorities to enable fulfilment of reporting obligations. The CRWMP will be developed and agreed in line with the process presented in Figure 1.1 Process Lifecycle of Resource Waste Management Plan.

The Contractor will be required to regularly revisit this CRWMP throughout the lifecycle of the project so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and to ensure that that data is collected on an ongoing basis so that it is as accurate as possible.

The Contractor will be required to:

- Reduce the use of virgin resources;
- Keeping materials in the economy as long as possible;
- Maintain their intrinsic value/quality as high as possible;
- Reduce fumes or emissions which may result in additional GHG emissions. Plant equipment and vehicles to be used on the proposed project should be selected based on their relative environmental performance; and
- Reduce hazardous substances in products and waste.
- •

This CRWMP has been prepared for the Proposed Development as there is potential for the project to exceed the specified Tier 2 construction waste threshold limits set out in the 2021 EPA Waste Management Guidelines.

This CRWMP has been prepared with reference to, and taking account of, the following legislation, plans and waste management guidance documents:

- The EU Waste Framework Directive (Directive 2008/98/EC) (The European Parliament and The Council of the European Union, 2008), as amended by Directive (EU) 2018/851 (Waste FD) (European Union (EU), 2018)
- The Waste Management Act 1996 2008, Amendments & Associated Regulations;
- Construction Industry Research and Information Association (CIRIA) document 133 Waste Minimisation in Construction;
- Design Out Waste: A design team guide to waste reduction in construction and demolition projects (EPA, 2015) The Litter Pollution Act 1997;
- Southern Region Waste Management Plan 2015-2021; and
- Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021).

•

Figure 1.1: Process Lifecycle of Resource Waste Management Plan



Source: Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021)

1.2 Structure of this CRWMP

Design Out Waste (EPA, 2015) notes that the preparation of a Waste Management Plan within the early design and feasibility phases provides a framework to carry out design reviews, and should be used as an implementation, benchmarking, monitoring and reporting tool throughout the overall construction process.

This CRWMP has been prepared in line with the recommendations of the Best Practice Guidelines (EPA, 2021) for Tier 2 projects and consequently addresses the following:

- Introduction
- Project description
- Roles and Responsibilities
- Design Approach
- Key Materials, Quantities and Costs
 - Waste forecasting: Analysis of the waste arising / materials surpluses.
 - Specific waste management objectives for the project.
 - Proposed strategies and associated costs: Methods proposed for prevention, reuse and recycling of wastes.
 - Materials logistics.
- Site Management
 - Monitoring procedures: Auditing and record keeping; and
 - Proposals for education of workforce and plan dissemination programme.
- Site Infrastructure

1.3 Irish Waste Management Targets

The EU Waste Framework Directive (Directive 2008/98/EC) set the basic concepts and definitions related to waste management, such as definitions of waste, recycling and recovery. It also included definitions for when waste ceases to be waste and becomes a secondary raw material (end-of-waste criteria) and how to distinguish between waste and by-product. The Directive was enacted in Ireland under the Waste Directive Regulations 2011 (S.I. No. 126 of 2011).

The EU Waste Framework Directive (2008/98/EC) requires Member States to take the necessary measures to achieve the minimum recycling/recovery target of 70% by weight for non-hazardous construction and demolition (C&D) waste, excluding naturally occurring materials. The Directive specifies that such a target should be achieved by preparing for reuse, recycling and other material recovery, including backfilling operations using waste to substitute other material.

Ireland is required to meet the waste re-use and recycling targets presented in Table 1.1.

Table 1.1: Targets

Target Specifics	Reference Year	Rate	Indicator
Preparing for re-use, recycling and other material recovery (incl. beneficial backfilling operations using waste as a substitute) of 70% by weight of C&D non- hazardous waste (excluding natural soils & stone)	2021	85%	On Track

Source: http://www.epa.ie/nationalwastestatistics/constructiondemolition/, EPA Waste Data Release, 10 August, 2023

Ireland is currently on-track to meet the EU waste targets for C&D waste. It should be noted, however, that soil and stones waste are excluded from the calculation of the Waste Framework Directive targets.

The EPA notes that just over 9 million tonnes C&D waste was generated in Ireland in 2021. The overall composition of C&D waste changed little between 2020 and 2021, with 85% being soil and stone waste, followed by waste concrete, brick, tile and gypsum (7%) and mixed C&D waste (4%). The proportion of segregated (wood, paper, glass, plastic and metal) C&D waste collected remained small at just under 4% increasing from 3.1% in 2020.

The composition of C&D waste in Ireland in 2021 is illustrated in Figure 1.2.



Figure 1.2: Composition of C&D waste material collected in Ireland, 2021

Source: www.epa.ie

The vast majority (96 %) of C&D waste underwent final treatment in Ireland in 2021; only 4% was exported abroad for final treatment.

Most C&D waste was backfilled (85%), with only 8% and 7% recycled and sent for disposal, respectively. The dominance of backfilling as a treatment operation reflects the large proportion of soil and stones in C&D waste.

Recycling was the main treatment operation for metals (100%), for segregated wood, paper, glass and plastic (77%).

For non-hazardous C&D waste other than soil and stone, Ireland achieved 85% material recovery, surpassing the 70% European target.

The Contractor(s) will be obliged to aim for an overall recycling rate of 70% of C&D material, in accordance with EU targets under Waste Framework Directive (2008/98/EC) as well as regional waste management targets.

1.4 Waste Management Regulatory and Policy Requirements

Southern Region Waste Management Plan 2015-2021, which includes the area of the proposed development, states the following:

"Managing waste in a sustainable and self-sufficient manner will be one of the key challenges for the region, and one in which every citizen has a role to play. How we manage our waste says a lot about how highly we value our environment. There is consensus that we should minimise our impact on the environment by working collectively to minimise the amount of waste we generate and manage the waste we do create in the best manner possible.the region is well provided for in terms of pre-treatment capacity to mechanically process recyclable wastes and residual waste to a lesser extent".

The Waste Framework Directive 2008/98/EC defines waste as "any substance or object that the holder discards or intends to or is required to discard".

The Waste Hierarchy described in the framework prioritises reduction over re-use, recycling recovery and disposal, as illustrated in Figure 1.3.



Figure 1.3: Waste Hierarchy

Source: OLCreate: UrbanSanWaste 1.0 Study Session 1 Introduction to Sanitation and Waste Management | OLCreate (open.edu)

Other Policy Requirements:

- A Waste Action Plan for a Circular Economy, Ireland's National Waste Policy 2022-2025 (GOI, 2020) sets out Ireland's approach to transitioning to a circular economy.
- For construction and demolition (C&D) waste, the plan supports the provisions and targets of the European Communities (Waste Directive) Regulations 2011 (GOI, 2011) by undertaking to streamline the decision-making processes for by-product notifications and end-of-waste and updating best practice guidance in line with the Waste Hierarchy.
- The Plan calls for the replacement of the existing Regional Waste Management Plans with a single National Waste Management Plan containing targets for reuse, repair, resource consumption and a reduction in contamination. The single Plan aims are to encourage sustainable consumption, prevent the generation of waste, improve the capture of materials to optimise circularity, and enable compliance to policy and legislation. Development of this National Waste Management Plan is currently ongoing with public consultation on the first draft closing in early July 2023
- The Kerry County Development Plan (CDP) 2022-2028 sets out the overall planning and sustainable development strategy for the county (Kerry County Council, 2022).

The primary legislative instruments that govern waste management in Ireland relevant to the Proposed Development are as follows:

- Waste Management Act 1996 (S.I. No. 10 of 1996), as amended. Sub-ordinate legislation to this Act includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended 2011 (S.I. No. 323 of 2011);
 - Waste Management (Collection Permit) Regulations S.I No. 820 of 2007 as amended 2008 (S.I No 87 of 2008);
 - Waste Management (Facility Permit and Registration) Regulations, S.I No. 821 of 2007 as amended 2008 (S.I No. 86 of 2008);
 - Waste Management (Licensing) Regulations 2000 (S.I No. 185 of 2000) as amended 2004 (S.I. No. 395 of 2004), 2010 and (S.I. No. 350 of 2010);
 - Waste Management (Packaging) Regulations 2003 (S.I. No. 61 of 2003) as amended 2004 (S.I. No. 871 of 2004), 2006 (S.I. No. 308 of 2006) and 2007 (S.I. No. 798 of 2007);
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997);

- Waste Management (Landfill Levy) (Amendment) Regulations 2012 (S.I. No. 221 of 2012), as amended 2015 (S.I. No. 189 of 2015);
- European Communities (Waste Electrical and Electronic Equipment) Regulations 2011;
- Waste Management (Registration of Brokers and Dealers) Regulations 2008 (S.I. 113 of 2008);
- Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009), as amended 2015 (S.I. 190 of 2015);
- Protection of the Environment Act 2003 (S.I. No. 413 of 2003);
- Litter Pollution Act 1997 (S.I. No. 12 of 1997); and
- Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects (EPA, 2021).

2 Roles and Responsibilities

2.1 Description and Role of the Client and Key Personnel

Shannon LNG Limited is the Employer /Client. The Client Advisory Team has the following responsibilities:

- The planning application, including decision-making on the nature and extent of the Proposed Development, and setting out of environmental mitigation measures, included in this CEMP;
- Post-consent manages the process towards construction including liaison with key environmental agencies and stakeholders;
- Undertakes a Client Engineering function, including inspections to ensure that detailed designs, plant, materials and works including scheduling meet the requirements of its functional specifications, its outline designs and its generic standards;
- Revising and maintaining the CRWMP through the design, planning, and procurement phases of the project, in accordance with this CRWMP
- Appointing a Resource Manager (RM) to track and document the design process, inform the Design Team, and prepare the CRWMP
- Handover of the CRWMP to the Contractor at commencement of construction for the development of the CRWMP in a similar fashion to how the safety file is handed over to the Contractor and
- Ensures that the Contractor employs an independent Environmental Clerk of Works (EnCoW) to assess the construction of the Proposed Development and advise the Contractor on the implementation of the agreed Contractor's CRWMP.
- •

2.2 Description and Role of the Resource Manager

The Resource Manager will be appointed by the Contractor(s) who will ensure that the objectives and measures contained within this CRWMP are incorporated into the project specific CRWMP to achieve the associated target re-use / recycling rates.

The Resource Manager will be responsible for all aspects of waste management at the different stages of the Proposed Development, and overall implementation of this CRWMP and associated procedures.

The Resource Manager, as appointed by the Contractor, will be technically competent and appropriately trained.

The Resource Manager will facilitate effective communication of the waste management objectives with all operatives associated with the project (including site staff, external contractors and suppliers).

Another key objective of the Resource Manager will be the maintenance of accurate records on the quantities of waste / surplus materials generated and the real cost (including purchasing) associated with waste generation and management. The recording of summary information will further assist the implementation of the plan.

The Resource Manager will keep records of the quantities of waste / surplus materials generated and the costs associated with waste generation and management.

The Resource Manager will ensure that reporting and recording requirements are met, and all necessary resources are in place to support the implementation of the plan.

2.3 Description of the Role of the Contractor

The appointed Contractor(s) will be responsible for the Health and Safety of site workers and the completion of the works to the satisfaction of the Employer.

On commencement of the project, the Contractor appointed to undertake the works will be responsible for the further development of this CRWMP and the implementation of all necessary protocols and measures to ensure regulatory compliance, including the provision of data to the local authorities to enable fulfilment of reporting obligations.

The Contractor will be required to regularly revisit this CRWMP throughout the lifecycle of the project so that opportunities to maximise waste reduction / efficiencies are exploited throughout, and to ensure that that data is collected on an ongoing basis so that it is as accurate as possible.

2.4 Description and Role of the Local Authority

The Local Authority as the planning regulator is responsible for the following tasks:

- Ensure that the requirement for an CRWMP for C&D projects (as specified in the CRWMP Guidelines (EPA, 2021) is required for all planning applications (through setting this requirement as an objective of the County Development Plan or local planning policy) for development where construction or demolition is proposed.
- Ensuring that any CRWMP submitted with planning complies with the requirements of the CRWMP Guidelines (EPA, 2021).
- Setting appropriate planning conditions as required in line with the requirements of Section 34(4)(I) of the Planning and Development Acts (GOI, 2000), as amended. Ongoing enforcement of these conditions through the construction phase.

2.5 Description and Role of other parties and key personnel

2.5.1 Project Supervisor Design Process (PSDP) / PSCS

- ECC Group have been appointed as the PSDP for the detailed design phase of this project; and
- The PSCS on the project will be the appointed Contractor(s).

2.5.2 Site Manager

The Site Manager will be responsible for the day to day running of the site and will direct and oversee the activities of the Contractor and subcontractors throughout the works. The Site Manager will be responsible for programming the works, will regularly consult with the Employer and will maintain site safety.

2.6 Contact Details

As detailed previously, the requirement to develop, maintain and operate this CRWMP will form part of the contract documents for the project and will be updated by the appointed Contractor in advance of the commencement of construction activities on site. At that time the specific roles and responsibilities will be confirmed with the Planning Authority as part of the next iteration of this CRWMP prior to construction.

Organisation	Role	Name	Contact Number	Email
To be confirmed				
To be confirmed				
To be confirmed				

Table 2.1: Contact details of site personnel and their roles

3 Design Approach

3.1 Proposals for Managing Waste Arisings

Waste arisings will be managed in accordance with the principles outlined in the Waste Management Hierarchy as illustrated in Figure 1.3.

In order of priority, the Waste Management Hierarchy sets out the most desirable approaches to waste management in the following order:

- Reduction/Minimisation
- Re-use
- Recycle
- Other Recover (including energy recovery)
- Disposal

3.1.1 Opportunity for Prevention and Reduction

Opportunities for the prevention of waste will be considered throughout all stages of the project. Contractors will plan the construction process to eliminate / reduce waste; specifically, careful planning will minimise the volume arising on-site, facilitate the use of reclaimed materials in the works, and influence wastage caused by poor materials handling.

Design Out Waste (EPA, 2015) notes that 33% of all on-site waste is due to a failure to implement waste reduction measures during the design stages. Materials logistics, specifically the avoidance of overstocking of materials, is a critical factor for material optimisation in preventing wasted material. A review assessment of this plan and detailed design plans will inform the appropriate quantities of materials required for the project thereby minimising, and potentially preventing, the generation of certain waste streams. In accordance with Best Practice Guidelines (EPA, 2021) and Design Out Waste, the following measures will be implemented at a minimum:

- Materials will be ordered on an 'as needed' basis to prevent over-supply to site;
- Materials required will be purchased in shape, dimensions, and form that minimise the creation of excessive scrap waste on-site;
- Storage and handling procedures and systems will be introduced to minimise generation of damaged materials / waste e.g. deliveries will remain unpacked until ready for use, sufficient space will be made available for manoeuvring of machinery etc.;
- The correct sequence of operations will be determined and implemented;
- Agreements will be made with suppliers, where possible, to ensure take back / buy back of surplus and sub-standard / rejected materials; and
- The primary Contractor will assign individual responsibility (through appropriate contractual arrangements) to sub-contractors for the purchase of raw materials and for the management of wastes arising from their activities.

Waste generated during the project will be re-used on-site, where practicable. Opportunities for recycling will be employed for any waste that cannot be re-used. Waste will only be sent for disposal if no other reasonable economically or technically feasible alternative can be found.

All wastes will be handled in a responsible manner with due regard to relevant legislation, codes and best practice guidelines.

Only authorised waste contractors with appropriate waste collection permits will be authorised to collect waste streams from the facility. Waste will only be transferred to facilities authorised to treat or dispose of the material in accordance with the requirements of the Waste Management Act 1996 (as amended) and associated Regulations.

Copies of all permits and licences will be retained with other waste-related documentation. Comprehensive waste descriptions will be provided on all documentation.

Appropriate and adequate waste segregation areas will be provided at secure locations on site. The number and size of containers and the number of uplifts required will be determined at a later stage in the project. The Contractor will ensure that containers are not filled beyond the maximum loading capacity of the collection vehicle. Effective inspection, containment and control measures will be implemented to ensure that no litter escapes from the construction site. Litter pickers will be employed within the construction site as required.

3.1.2 Opportunity for Re-use/Recycling

Material that is generated will be reused on site or salvaged for subsequent reuse to the greatest extent possible or recycled. Disposal will only be considered as a last resort. Initiatives will be put in place to maximise the efficient use/reuse of materials.

All metals are salvable and can earn a rebate which can offset collection and transportation costs. Clean, uncontaminated cardboard and certain hard plastics can be recycled. Waste contractors will charge considerably less to take segregated wastes such as recyclable waste from a site than mixed waste. Timber can be recycled as chipboard. If waste are segregated, waste contractors will charge considerably less as sorting and processing of waste reduces.

3.1.2.1 Concrete

The Contractor will be encouraged to process excavated concrete to be reused as general fill.

3.1.2.2 Soil

All material will be tested and in the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material and disposed of appropriately. Soil will be reused where possible.

3.1.2.3 Hazardous Waste Arisings

Waste fuel and oil and nominally empty containers will be appropriately contained and stored in designated areas on drip trays to prevent loss through drips and spills. Paints will be stored in appropriate containers in designated areas on drip trays, where practicable, non-hazardous paints will be used.

Hazardous wastes will be collected by appropriately authorised waste contractors for recovery or disposal as appropriate. Nominally empty containers will not be sent for disposal unless a determination can be made that the residual content does not exhibit any of the hazardous characteristics associated with hazardous waste.

3.1.2.4 Scrap Metal

Scrap metal will be sent to an appropriately authorised waste contractor for recycling.

3.1.2.5 Bitumen/Tarmacadam

Opportunities for bitumen / tarmacadam recycling will be investigated. If no alternatives are available, the waste arising will be sent for disposal.

3.1.2.6 Miscellaneous Waste Arisings

Small volumes of a variety of waste streams will be generated including packaging waste, plastic pipe and cable cut-offs, green, and mixed municipal type waste. The generation of surplus waste streams will be minimised through careful planning; however, it will not be possible to eliminate all surplus waste arisings e.g. cable and pipe cut-offs.

- Cardboard will be flattened while paper and cardboard containers will be covered to prevent ingress of water;
- Plastic will be segregated at source and kept as clean as possible prior to placement in a covered container; and
- Paper, cardboard and plastics will be recycled whereas mixed municipal waste arising will be sent for disposal.

3.1.3 Green Procurement

Tender specifications, selection and award criteria and contract conditions will require procurement of products and services that prevent and reduce waste.

4 Key Materials, Quantities and Cost

4.1 **Proposals for Managing Waste Arisings**

The main waste stream arisings (including surplus materials) which are likely to be generated during the demolition and construction phase, are presented in Table 4.1.

Waste Type	European Waste Classification (EWC) Code ¹	Waste Classification
Soil and Stones	17 05 04	Non-hazardous
Nominally Empty Containers containing residues of or contaminated by dangerous substances	15 01 10*	Hazardous
Waste Diesel and Oil	13 07 01*	Hazardous
Waste Fuels (Miscellaneous)	13 07 03*	Hazardous
Scrap Metal	17 04 07	Non-hazardous
Bitumen / Tarmacadam	17 03 02	Non-hazardous
Surplus Bitumen / Tarmacadam	17 03 02	Non-hazardous
Gypsum-based construction material	17 08 02	Non-hazardous
Mixed construction and demolition waste	17 09 04	Non-hazardous
Surplus Cabling	17 04 11	Non-hazardous
Plastic Pipe Cut-offs	17 02 03	Non-hazardous
Plastic Packaging	15 01 02	Non-hazardous
Paper and Cardboard Packaging	15 01 01	Non-hazardous
Concrete	17.01.01	Non-Hazardous
Bricks	17.01.012	Non-Hazardous
Tiles and ceramics	17.01.03	Non-Hazardous
Electrical and electronic components	20 01 35*	Hazardous
Electrical and electronic components	20 01 36	Non-hazardous
Batteries and accumulators	20 01 33*	Hazardous
Batteries and accumulators	20 01 34	Non-hazardous

Table 4.1: Waste Types and Associated EWC Codes

4.2 Waste Management Targets

The Contractor will be obliged to aim for an overall recycling rate of 70% of C&D material, in accordance with EU targets under Waste Framework Directive (2008/98/EC) as well as regional waste management targets. Waste management targets for anticipated waste arisings regarding reuse / recycling / recovery and disposal rates will be confirmed by the appointed Contractor.

¹ The selected European Waste Classification (EWC) codes provided are provisional only. In a number of instances more than one EWC may be considered appropriate. Care should be taken to ensure that the waste collectors permit includes all EWC codes specified in the appropriate documentation. In addition, there will be a requirement for a technically competent person to assess waste as it arises and to make a determination as to the classification of the material in accordance with the Hazardous Waste List.

The appointed Contractor shall dispose of all debris, sewage, surplus material (including surplus excavated material) and all other waste materials arising from or connected with the Works to an appropriate licensed waste disposal site/facility, fully in accordance with the requirements of current waste management legislation the Waste Management Acts 1996 (as amended) and associated Regulations and to the satisfaction of the Engineer and relevant local authorities.

4.3 Waste Management Costs

4.3.1 Financial Cost Associated with Waste

The total cost of implementing the CRWMP will have to consider costs such as, handling, storage, transportation, revenue from rebates and disposal costs.

4.3.2 Re-use / Recovery

Reusing of materials on site will reduce disposal costs. Clean and inert soils, gravel, stones etc. which cannot be reused on site may be classified as a by-product (under Article 27 of the 2011 Waste Directive Regulations). This material may be used as capping material for landfill sites, or for the reinstatement of quarries etc. subject to approvals by the EPA. This material is often taken free of charge for such purposes, or when used as capping in landfills will not attract the landfill tax levy, thereby reducing final waste disposal costs.

4.3.3 Recycling

All metals are salvable and can earn a rebate which can offset collection and transportation costs. Clean, uncontaminated cardboard and certain hard plastics can be recycled. Waste contractors will charge considerably less to take segregated wastes such as recyclable waste from a site than mixed waste. Timber can be recycled as chipboard. If wastes are segregated, waste contractors will charge considerably less as sorting and processing of waste reduces.

4.3.4 Disposal Charge

The total cost of waste management associated with the Proposed Development will be calculated in regard to the purchase costs of materials, handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be recorded for the range of C&D materials and waste arising. At this stage, it is difficult to determine indicative total waste management costs as the CRWMP is preliminary in nature. When exact quantities and volumes of waste material cannot be determined the full disposal costs can be calculated.

A template for the recording of costs is provided in Table 4.2. This record will be live and will be developed as the project progresses.

Table 4.2: Indicative	Costs	Breakdown	for	Waste	Management
-----------------------	-------	-----------	-----	-------	------------

Waste Type	Estimated Quantity (Tonnes)	Estimated Cost (€)
Quantity of Material	To be confirmed	To be confirmed
Purchase Cost	To be confirmed	To be confirmed
Materials Handling Costs	To be confirmed	To be confirmed
Material Storage Costs	To be confirmed	To be confirmed
Material Transportation Costs	To be confirmed	To be confirmed
Material Treatment Costs	To be confirmed	To be confirmed
Total Waste Management Cost	To be confirmed	To be confirmed
Unit Waste Management Cost	To be confirmed	To be confirmed

5 Site Management

5.1 Resource Manager

The Resource Manager will take responsibility for all aspects of waste management at the different stages of the Proposed Development and overall implementation of the CRWMP and associated procedures.

The Resource Manager, as appointed by the Contractor, will be technically competent and appropriately trained, and will take responsibility to ensure that the objectives and measures contained within this CRWMP are transposed into the detailed CRWMP, and are subsequently implemented including associated target re-use / recycling rates. The Resource Manager will also facilitate effective communication of the waste management objectives with all operatives associated with the project (including site staff, external contractors and suppliers).

Another key objective of the Resource Manager will be the maintenance of accurate records on the quantities of waste / surplus materials generated and the real cost (including purchasing) associated with waste generation and management. The recording of summary information will further assist the implementation of the plan.

The Resource Manager will ensure that reporting and recording requirements are met, and all necessary resources are in place to support the implementation of the plan.

5.2 Site Personnel

All site personnel will be instructed about the objectives of the CRWMP and informed of the responsibilities to effectively implement the plan. Where waste prevention, source segregation, material reuse techniques, and best practice guidelines apply, each member of staff will be given instructions on how to comply with the CRWMP.

5.3 Training

Copies of the CRWMP will be made available to all relevant personnel on site. The Resource Manager will arrange for all site personnel to receive training on the objectives of the plan and materials management. The topics to be covered will include:

- Project programme and requirements;
- Project commitments and targets;
- Health and safety requirements;
- Materials to be segregated;
- Segregation systems and protocols;
- Arrangements for the storage and handling of reusable materials and recyclables;
- Instruction on hazardous wastes and the dangers of each hazardous waste; and
- Document control requirements.

Toolbox talks on resource management will be provided on a regular basis to ensure that site personnel are aware of the resource management practices associated with their work and the appropriate control measures that are required to carry out their work in compliance with this CRWMP.

5.4 Record Keeping and Communications

A system will be developed to ensure that all details of generation, movement and treatment of C&D waste is recorded. Where practicable, a computerised monitoring tool will be employed to assist in facilitating waste reduction via benchmarking. As such, this system will enable the Contractor to measure and record the quantity of waste generated and identify wastage more readily as well as identify successes or failures as measured against performance targets. An indicative template is provided in Appendix A Tracking Template.

Verifiable and validated tracking and authorisation documentation will be maintained for all wastes destined for re-use, recovery, recycling, other recovery (including energy recovery), or disposal. Justification will also be provided where a disposal option has been employed.

In addition, a record will be kept of all materials as they arrive on site detailing the assignment of specific uses within the works. This will enable the monitoring of the quantity and type of waste produced at various stages throughout the project.

All waste material will be managed in accordance with the Waste Management Act 1996 (as amended) and associated Regulations e.g. all hauliers will hold waste licences and/or Certificates of Registration (COR) for the specified EWC and the appropriate local authority at the final destination. Waste will only be sent to facilities authorised to accept, treat and / or dispose of the material. Copies of all waste accreditations relevant to the waste treatment / collection will be retained with other waste records.

5.5 Communications

The Resource Manager will be responsible for internal reporting of resource statistics to Shannon LNG Limited and the Contractor management. This will include performance relative to agreed targets and objectives which will be included as an agenda item at site meetings.

The Resource Manager will engage with the relevant local authorities and the EPA on any site inspection or enforcement audits undertaken at the site. All follow-up actions and corrective actions will be logged and reported to the local authority, as appropriate.

The Resource Manager will engage with other stakeholders (the public, etc.) as appropriate in relation to the resource management on site.

Upon completion of construction, the Resource Manager will prepare a final report summarising the outcomes of resource management processes adopted, the total reuse and recovery figures and the final destinations of all resources taken off-site. This report will be issued to Shannon LNG Limited, Contractor management and the local authorities.

5.6 Waste Auditing

The effectiveness of the plan, and its implementation, will be subject to regular audits by the Resource Manager throughout the duration of the project. The purpose of the waste audit is to highlight the problems that waste can cause and the benefits of prevention and minimisation.

The audits will focus on material inputs to the project (assignment of materials to specific uses within the works) and the waste outputs for each operation, identifying additional opportunities for waste reduction, re-use and recycling. The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

The audit findings will reflect the success or failure of reaching performance targets and subsequent Action Plans will be developed to address any issues and highlight corrective

actions that may be taken in relation to management policies or site practices in order to bring about further waste reductions. Inspections of the waste storage areas will be undertaken on a weekly basis, issues relating to housekeeping, inappropriate storage and / or segregation will be actioned at the earliest practicable opportunity.

Waste CollectionSection 32 of the Waste Management Act 1996, as amended, places the responsibility on the original waste producer, or waste holder, to transfer waste only to an appropriate person, an appropriate person in this instance being a Local Authority and/or a person with a valid Waste Collection Permit. It is an offence under Section 32 (1) of the Waste Management Act 1996 to cause or facilitate the abandonment, dumping or unauthorised management of waste, or to hold, transport, recover or dispose of waste, or treat waste, in a manner that causes or is likely to cause environmental pollution. Please note it is also an offence under Section 32 (2) of the Waste Management Act 1996 to transfer the control of your waste to any person other than an appropriate person.

All residual resources legally classified as a 'waste' moved off-site, including soil and stone must be collected by authorised waste collectors² (as authorised by the National Waste Collection Permit Office).

Further details with regards to permitting are available from the National Waste Collection Permit Office Áras an Chontae, Charleville Road, Tullamore, Co. Offaly R35 F893, and http://www.nwcpo.le/.

5.6.1 Waste Shipments/Movements of Hazardous Waste Within Ireland

Dublin City Council is designated as the National Competent Authority for the export, import and transit of waste shipments. More information with regards to legislation and guidance is available at https://www.dublincity.ie/residential/environment/national-tfs-office/about-national-tfs-officeAll waste that requires off-site movement will need to be transported in accordance with these requirements.

5.6.2 Waste Disposal / Recovery

All residual resources legally classified as a 'waste' taken from Site must be sent to suitably authorised waste facilities for disposal or recovery as outline in the RWMP Guidelines (EPA, 2021). The following authorisations are applicable:

- Certificate of Registration (CoR) from the Local Authority (issued to private sector).
- CoR from the EPA (issued to Local Authority).
- Waste Facility Permit (WFP) from the Local Authority.
- Waste or Industrial Emissions Licence from the EPA.

A list of currently authorised (CoR or WFP) waste sites in each Local Authority is available on the following website: http://facilityregister.nwcpo.ie.

² A list of currently authorised waste collectors is available on the following website: https://www.nwcpo.ie/permitsearch.aspx.

6 Site Infrastructure

This section relates to on-site signage, separation, and storage for handling and managing of waste and resources.

- Prior to construction, the site layout will be reviewed by Shannon LNG Limited to ensure that the proposed Waste Storage Areas (WSAs) have adequate space for storage and handling;
- WSAs include stockpiles, skips or secure containers for hazardous materials. All WSAs will be assessed as fit for purpose and suitably contained, or bunded as required;
- The WSA will be set out to reduce any potential impact on sensitive human or natural environments and a suitable buffer will be applied to mitigate any impact;
- Labelling and signage will be used onsite to inform personnel of key WSA requirements and restrictions, with clear signage provided on all WSAs; and229
- Signage will provide information to assist good resource practice across the site.

B. Appendix B – Construction Traffic Mangeement Plan



Shannon Technology and Energy Park (STEP) 220kV Grid Connection

Construction Environmental Management Plan Construction Traffic Management Plan

July 2024

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Shannon Technology and Energy Park (STEP) 220kV Grid Connection

Construction Environmental Management Plan Construction Traffic Management Plan

July 2024

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1 Introduction

The Construction Traffic Management Plan (CTMP) aims to minimise disruption and enhance safety in traffic operations during the construction phase of the Shannon Technology and Energy Park (STEP) 220kV Grid Connection Development (hereafter referred to as 'the proposed development'). It incorporates measures that specifically mitigate transport impacts identified in Chapter 17 Roads and Traffic of the Environmental Impact Assessment Report (EIAR).

1.1 General

This CTMP will remain a 'live' document, which will be updated in response to any relevant conditions of the Approval, and to reflect the detailed design of the approved development – in collaboration and agreement with the relevant Planning and Roads Authority, i.e., Kerry County Council (KCC). It will be reviewed and revised as necessary to ensure that the measures implemented are effective and remain within the parameters assessed in the EIAR submitted with the application for approval of the proposed development.

This CTMP considers anticipated development generated traffic movements on the proposed traffic routes likely to be used for construction access. Figure 1.1 depicts the proposed development site context.



Figure 1.1: Site Context Plan

Source: Mott MacDonald

1.1.1 Structure of this Report

The report is sub-divided into the following Sections:

- Section 2 outlines the background context attributed to the project.
- Section 3 lists the proposed traffic management mitigation measures to be implemented during the construction phase of the proposed development.
- Section 4 presents the measures to monitor and implement the CTMP.Section 5 provides a summary statement for the CTMP.

1.1.2 Objectives and Strategies

- The objectives of the CTMP are:
- To provide protection to site personnel and the general public from traffic hazards that may arise as a result of the construction activities.
- To manage potential adverse impacts on traffic flows.
- To minimise adverse impacts on users of the road and adjacent properties and facilities.
- To ensure public and private roads and passageways will remain open to traffic.
- To adhere to the commitments described in the planning application.
- To enhance road safety and limit adverse effects of construction works and construction traffic on the existing road network and the communities it serves.

•

- In an effort to meet these objectives the CTMP will incorporate the following strategies:
- Manage construction activities to limit likelihood of delays and queues on the L-1010 road and in the nearby town of Tarbert are avoided.
- Reasonable management of all road users including motorists, pedestrians, cyclists, people with disabilities and people using public transport.
- Ensuring work activities are carried out sequentially to minimise adverse impacts.
- Ensuring that the provision will be made for site personnel to enter the work area in a safe manner in accordance with safety procedures.
- Ensuring that all reasonable precautions are taken to prevent dirt, mud and other material being dropped or spread by traffic associated with the works and operation.

2 Construction Traffic

2.1 Construction Programme

The construction commencement date is subject to the approval of planning permission, precommencement obligations and progression of the design to construction stage. The key stages and activities within the construction programme and construction working hours are discussed hereafter.

This timeline may vary depending on the time of year, weather conditions and the availability of specialised equipment. If feasible, the Main Engineering, Procurement and Construction (EPC) Contractor may seek to improve upon the programme duration.

The overall construction programme is envisaged to take approximately 27 months and is to commence in Q4 2026. An indicative construction programme for the substations is shown in Table 2.1 (some of the activities noted will be carried out in parallel), and an indicative construction programme for underground cabling is shown in Table 2.2.

Construction Phase	Activity	Approximate Timeline
Site Preparation (GIS Substation)	Construction of new site entrance and preliminary site Drainage Works	18 Weeks
	Site Preparation and Groundworks	
	Drainage	
	Permanent Fencing Installation	
	Ducting for cable circuits to Demand Customer from substation to transition pit	
GIS Substations (civils)	Civil construction of new GIS Substation Building	34 weeks
	Compound levelling and finishing surface	
GIS Substations (electrical)	Electrical Installation	32 weeks
	Pre-commissioning	
Substation Energisation	Final commissioning and energisation	12 weeks

Table 2.1: Indicative Construction Programme – Substations

Source: Mott MacDonald

Table 2.2: Indicative Construction Programme – Underground Cabling

Construction Phase	Activity	Approximate Timeline
Civil Works		
	Pre-construction	12 weeks
	Trenching and ducting works and temporary reinstatement	30 weeks
Total		42 weeks
Electrical Works		
	Pre-construction works	4 weeks
	HV cable joint bay re-excavation	3 weeks
	Proving of ducting/HV cable jointing	2 weeks
	HV cable jointing	28 weeks

Construction Phase	Activity	Approximate Timeline
	HV cable commissioning (sheath test, cross bonding and HV/AC testing)	4 weeks
	Permanent re-instatement of joint bays (Civils contractor)	3 weeks
Total		44 weeks

Source: Mott MacDonald

2.2 Construction Traffic

The construction traffic movements will comprise those associated with the movement of construction personnel and Heavy Good Vehicles (HGVs) transporting construction materials, components or plant. The construction related traffic will utilise several public roads in the KCC local authority area. This includes the N67, N69 and the L-1010 (between Tarbert and the construction compound access).

The use of the L-1010 road from the Ballylongford side for access / egress to the construction compound access will not be used.

Heavy Goods Vehicles (HGVs) will be required to access the proposed development from the L-1010 via the N67/N69.

The construction vehicles' arrival and departure times will be managed to avoid coinciding with existing peak traffic periods; peak traffic generation periods by school start and finish times at Tarbert Comprehensive School which is located on the L-1010.

The main HGV construction routes are shown in Figure 2.1.

Figure 2.1: Main Construction Routes



Source: Mott MacDonald, TII (Traffic Infrastructure Ireland), ESRI (with various sources as noted on the plan)

The construction phase will generate deliveries of construction materials such as ducting, cabling, and bulk material e.g. ready-mix concrete.

Excavated material (from any carriageway works), will either be reused on-site or disposed of offsite to suitably licenced waste facilities as necessary during the construction phase.

2.2.1 Construction Compounds

As detailed in the EIAR Chapter 5: Description of the Proposed Development, the construction compound will be located adjacent to the proposed substations and main STEP Power Plant. There will also be three temporary laydown areas, two located in close vicinity to the Line Cable Interface Mast (LCIM) at the connection point and one located south of the construction compound. The construction compound will accommodate construction phase car parking, welfare facilities and laydown areas as necessary.

The construction compound will be accessed via the proposed STEP Power Plant development access road (which forms a junction with the L-1010). The smaller laydown area will be accessed from a track via the Kilpaddoge Substation access road which also forms a junction with the L-1010.

2.2.2 HGV Movements

It is expected that an average of approximately sixteen Heavy Goods Vehicle (HGV) movements per day will be required during the site preparation and civil construction phase of the proposed substation construction. This is expected to reduce during the electrical installation and commissioning phase of the substation.

For the cable route installation, approximately 48 HGV movements per day will be required during the civil construction of the cable route. Once the civil works are completed, the electrical installation is expected to require a maximum of twelve HGV movements per day.

The existing normal traffic volumes around the area and Tarbert are low. The local school at drop off / pick up peak times generally generates the highest volume of traffic in the area at any one time. These times are typically from 08:30 to 09:15 and from 15:45 to 16:30 during school terms. Construction traffic will be organised and planned to minimise generating additional traffic volumes in the area during these peak hours.

Further information regarding HGVs in includes in Section 2.2.

2.2.3 Construction Worker Movements

The number of construction personnel required during the construction phase is expected to peak at approximately 60 persons for the substation construction (civil works phase), and five to eight persons per crew working on the cable route (civil and electrical works phases). It is expected that up to three crews may be working on the cable route at a time.

It has been assumed that construction personnel will travel to site using van/minibus or private passenger vehicle (in some cases accommodating more than one occupant).

A vehicle occupancy rate of 1.25 is assumed and in the robust-case scenario this would result in a peak daily requirement of 48 vehicles (approximately 96 two-way movements per day) for the civil works phase and twenty vehicles (approximately 40 two-way movements per day) for the electrical works phase.

Car parking for contractors' vehicles will be provided within the temporary contractor's compound. Temporary signage will also be erected at the entrance to the site.
2.2.4 Lane Closures

As detailed in EIAR **Chapter 17** the L-1010, in the vicinity of the proposed development, is to be widened to accommodate a 2-way single carriageway by KCC in advance of the main construction elements of the proposed development. These KCC works include the construction/installing of cable ducts.

For completeness, for the substation site: site mobilisation, site clearance, archaeology resolution and ecology clearance work may start in parallel with KCC's works on the L-1010, however the main construction works will take place after the road widening works.

Following the completion of civil works associated with the cable route (off the public road network) electrical works will commence including the re-excavation of joint bays, proving of ducting, HV cable jointing, HV cable commissioning and the permanent re-installation of joint bays.

A proportion of these works will be undertaken on the L-1010 (approximately 2.5km in length). During these works localised lane closures on the L-1010 will be required.

3 Measures identified to Minimise and Mitigate Traffic Impacts

3.1 General

Road sections in the study area have been reviewed with the principal aim being to minimise potential disruption to local communities, and general traffic. There are a range of traffic management measures proposed to minimise potentially disruptive impacts associated with construction works and construction traffic. These measures are hereafter described.

3.1.1 Time Control

Construction working hours will be conditionally defined through planning agreement or road opening license. Normal working hours are expected to be Monday to Friday 07:30 to 18:00 and 08.00 to 14.00 on Saturday and no works will take place on Sundays or Bank Holidays. Construction will occur during normal construction working hours.

Construction traffic times will be agreed with KCC in advance to avoid coinciding with the peak time associated with Tarbert Comprehensive School. i.e. Construction personnel traffic will be avoided between 08:30 - 09:15 and 15:30 - 16:15.

No HGV traffic will be allowed pass the existing school on the L-1010 at Tarbert for 20 minutes before and 10 minutes after the opening and closing times of the school. The elimination of passing HGV traffic during these time periods will ensure the continued safe delivery and collection of children at the school.

In instances where extended hours / days are required works will only be undertaken with prior agreement with the relevant statutory authority.

The appointed contractor will plan and manage construction works activities to minimise potential disruption on the surrounding road network and any other detrimental impact to the local community.

The appointed contractor will liaise with KCC upon finalisation of the construction programme to ensure (as far as is reasonably practicable) that no conflict with planned road works in the vicinity of any construction works occurs so as not to impact motorists further.

Deliveries will be scheduled, as far as is reasonably practicable, to avoid network peak hours and passing by schools around typical drop-off and pick-up times. Where practically achievable, diversion routes will not apply outside of the compound's hours of operation.

Accordingly, the appointed contractor will discuss and agree with KCC on times to be avoided at schools and other community receptors at peak periods of the construction programme to minimise disruption.

The appointed contractor will liaise with KCC regarding local events dates and seek to avoid traversing affected route sections at agreed times.

3.1.2 Transportation Protocol

All Contractors will adhere to the agreed CTMP and any relevant conditions of approval imposed by KCC.

All construction vehicles associated with the proposed development will:

- display a unique identification number shown on a plate clearly visible.
- be securely sealed.
- record origin, destination, and route of the vehicle.
- display and ensure vehicle identifications including registration plates are clearly visible.

Drivers of all construction vehicles will:

- access their destination worksite via an approved route; this is to be determined by the approved Contractor in conjunction with the administering local authority.
- observe speed limits.
- drive in a safe and courteous manner with due care and consideration for other road users both vehicular and pedestrians.
- adhere to the hours of operation detailed by the TMP.
- not deliberately wait or stack on any public road.

The appointed Contractor will maintain a management system whereby the following records are retained and made available on request to KCC:

- the number of vehicles arriving and leaving their destination.
- all complaints received regarding transport and resultant action taken.
- all instances where a protocol has been breached and resultant action taken.

The Client will supply the following information to KCC, which will be treated in confidence:

- action to be taken when a protocol is breached; and
- a log of vehicle movements.

3.1.3 Road Cleaning/Sweeping

To reduce the potential for debris being deposited onto the local road network in the road sections/compound areas, the appointed contractor will ensure that public roads and footways are cleaned and swept during and after the works. This cleansing regime will minimise the amount of deleterious material deposited on the road surface. The appointed contractor will ensure that the nearest public road will be kept clear of debris by monitoring and then utilising a road sweeper where necessary.

3.1.4 Speed Restrictions

All construction workers, including contractor managed HGV drivers, will be briefed on the absolute requirement to adhere to posted speed limits on public roads through induction sessions and through regular briefings (toolbox talks). Other parties responsible for site deliveries will also be instructed per the requirement for compliance with posted speed limits on all roads.

Speed limits posted within compounds will be considered mandatory and, therefore will be complied with.

3.1.5 Temporary Signage

During the construction phase, signage will be installed to warn road users to the presence of the works access and the associated likely presence of large or slow-moving construction traffic.

General information signage will be installed to inform road users and local communities of the nature and location of the works, including contact details should they require additional information.

Examples of temporary (construction phase) traffic signage are shown in Figure 3.1.

Figure 3.1: Temporary Traffic Signage Examples



Source: Traffic Signs Manual Chapter 8

Temporary signage arrangements will be formally agreed with KCC prior to installation and commencement of construction. All signing will also be provided in accordance with the Traffic Signs Manual.

Prior to installation, all signs and devices will be checked to confirm that they are in good condition and meet the following requirements:

- Items that are bent, broken or have surface damage shall not be used.
- Items will be free from accumulated dirt, road grime or other contamination.
- Fluorescent signs which colour has faded to a point where they have lost their daylight impact will be replaced.
- All sign faces are to be of retro-reflective material and the retro-reflectivity, colours, chromaticity, and luminance factors will be as specified in the Specification TS4 or any further amendments or replacement.

All signs will be positioned and erected such that:

- They are properly displayed and securely mounted.
- They are within the driver's line of sight.
- They will not be obscured from view.
- They will not obscure other devices from the driver's line of sight.
- They will not become a possible hazard to workers or vehicles.
- They will not deflect traffic into an undesirable path.
- Signs and devices that are erected before they are required shall be covered by a suitable opaque material

3.1.6 Temporary Traffic Management

The construction worksite requirements in conjunction with existing road corridor geometry on the L-1010 necessitates that localised lane closures will be required.

Temporary traffic management may include:

- Single alternate lane operation controlled by temporary traffic signals on two lane single carriageway sections; or
- Single alternate lane operation manually controlled using stop/go signs.

3.1.7 Public Transport

The appointed contractor will discuss with KCC and local bus operators regarding matters that could affect the flow of buses and, will implement reasonable and practically achievable measures to mitigate any disruption to bus services and inconvenience to service users.

3.1.8 Pedestrian, Cyclist or Equestrian Routes

Appropriate signage advising of dates and hours of working will be installed on the pedestrian, cyclist, and recreational routes, among others, in advance of road crossing points to warn users of construction traffic.

The exact details and location of the signage will be agreed with KCC.

3.1.9 Parking for Vehicles of Construction Workers, Operatives and Visitors

To avoid detriment associated with obstructive parking, adequate car parking space for permanent construction workers, visitors and deliveries will be provided within the site compound. Car parking will not be permitted on any public road network adjacent to the site to minimise the potential for obstruction and delay for other road users. The requirement for construction workers not to park their private vehicles on public roads will be a mandated and advised to all construction workers prior to commencement of works and reinforced via 'toolbox talks'.

Vehicle sharing will be promoted to construction workers by the contractor during the induction process.

4 **CTMP** Implementation and Monitoring

4.1 General

The implementation and monitoring of the CTMP will be the responsibility of the appointed Contractor. Further evolution of this CTMP will be required during the detailed proposed development planning stages and potentially during the construction phase.

The appointed Contractor may employ several sub-contractors, and in such circumstances subcontractors' traffic related activities will fall under the requirements of the CTMP and therefore sub-contractor personnel and sub-contractor managed construction vehicle drivers will have an obligation to adhere to the CTMP. This obligation will form part of the procurement process and will be written into any relevant employment or commissioning contract.

Compliance will be monitored by the Contractor's Project Manager, to ensure that vehicles follow the measures set out in the CTMP and to record any complaints arising.

Non-compliance with the CTMP will constitute a breach of contract, and action will be taken against the Contractor should repeated non-compliance continue. Details of the proposed monitoring and enforcement regime will be supplied to KCC upon request.

4.2 Responsibilities

The appointed Contractor will nominate a person responsible for the co-ordination of all elements of traffic and transport, except community liaison during the construction process, a nominated Liaison Officer.

The Client will appoint a Community Liaison Contact. The Community Liaison Contact will be the direct point of contact for the developer organisation with the local community. Accordingly, local residents and business holders can contact the Community Liaison Contact for general information purposes or to discuss specific matters pertaining to traffic management or site operation.

The Community Liaison Contact will regularly liaise with the nominated Liaison Officer. Contact details for the Liaison Officer and Community Liaison Contact will be made available to relevant parties and more generally to the local community prior to commencement of works on-site.

The appointed Contractor (or their appointed agent) will review the number of site personnel, traffic numbers, and the construction programme as the proposed development progresses. Any proposed or unplanned substantive changes will be discussed and agreed with KCC as far as is reasonably practicable.

As necessary, meetings will be held by the appointed Contractor with KCC to discuss the CTMP including any relevant issues raised by the local community.

4.3 Transport Co-ordination

The appointed Contractor will be responsible for the co-ordination of all elements of HGV transport to and from the worksites. The appointed Contractor (or their appointed agents) will be responsible for co-ordination and liaison with sub-contractors, KCC, TII (Traffic Infrastructure Ireland) and emergency services. The Client will be responsible for co-ordination and liaison with the local community.

The Liaison Officer will inform KCC (or agents thereof) of any important matters that could affect traffic movement by means of reports issued at regular intervals or by day-to-day reports of any substantial, essential changes to transport plans necessitated by circumstances.

4.4 Communication and Consultation

As set out in Section 4.2, the Client will nominate a Community Liaison Contact to act as a point of contact with the local community. The Community Liaison Contact will be responsible for keeping the local community informed of progress on the site and warning them of upcoming activities which could give rise to increased construction vehicle movements. The Community Liaison Contact will work in tandem with the appointed Contractor's Liaison Officer.

The Community Liaison Contact will be able to attend community meetings to provide a report and to be on hand to answer any questions that the local community may have. Contact details will be provided for the Community Liaison Contact (telephone number and email address) and will be made available locally so that members of the public have an opportunity to ask questions and provide feedback.

The appointed Contractor will utilise local media channels to circulate information regarding traffic management where necessary.

Signs will be erected on fences surrounding the construction compound to provide contact details of the appointed Contractor's Project Manager. These contact details will also be provided directly to the emergency services.

4.5 Liaison with Other Developers/Contractors

It is recognised that the construction phase, associated with the proposed development, could coincide with the construction of other proposed developments, whereby construction related traffic will utilise sections of the same public roads.

If the construction phase of any notably sized development(s) appears likely to overlap with the proposed development, the appointed Contractor will seek to liaise with the appropriate developer organisation regarding the scheduling of deliveries to identify potential means of reducing the effects of combined construction.

Prior to commencement of construction, and during the construction phase, engagement with the proponents of other developments (including Transport Infrastructure Ireland, ESB, Eirgrid, Irish Water and KCC) will continue and where there is potential for works to be carried out in parallel, appropriate mitigation measures will be implemented including the scheduling of works and regular liaison meetings between project teams to ensure that plans are co-ordinated and impacts on population and human health are minimised. The specific detail will be developed by the appointed contractor within the parameters assessed in the EIAR.

4.6 **CTMP** Review

The CTMP, as a 'live document', will be reviewed on a regular basis by the appointed Contractor prior to and during the construction phase of the proposed development and will be developed accordingly within the parameters assessed in the EIAR. The CTMP will be subject to change during the proposed development's evolution which will confirm the efficacy and implementation of all relevant mitigation measures and commitments identified in the application documentation, which in some cases changes may require approval by KCC.

5 Implementation Roles & Responsibilities

5.1 Contractors

The construction contractors will include the following:

- Civil, Structural and Architecture (CSA).
- Mechanical.
- Engineering and Installation (E&I).
- Heating, Ventilation and Sprinkler (HVAC).

5.2 **Project Site Representatives**

The main project and Site representatives during the construction stage will include the following:

- Construction Manager.
- Project Manager.
- Health and Safety Officer.
- Quality Manager.
- CSA Supervisors.
- Mechanical Supervisors.
- Engineering and Installation Supervisors.
- People-Plant Interface & Logistics Coordinator.
- Traffic Management Coordinator.
- Project Environmental Consultant (PEC).

5.3 Roles and Responsibilities

All site activities will be undertaken in accordance with the requirements of the Health and Safety Plan developed for the construction phase of the Proposed Development which will also list out all of the roles and responsibilities.

In addition to the Health and Safety Plan, roles and responsibilities for the relevant parties which are specific to construction traffic management are outlined below.

5.3.1 Construction Manager

The Construction Manager will be responsible for:

- Identifying and liaising with stakeholders including the Contractors with regards to the traffic management on and offsite.
- Review of Contractor Method Statements with regards to traffic management requirements, compliance and implementation of restrictions.
- Obtaining any necessary road traffic permissions & consents relating to specific construction activities.
- Preparing and submitting applications to KCC for an abnormal load permit should they be required.

- Ensuring that all their site personnel are aware of the traffic management risks, necessary controls / requirements and period restrictions, communicating any traffic management requirements to sub-contractors;
- Repair without unreasonable delay any dangerous construction vehicles / machinery; and
- Maintaining cleanliness of the public roads and pedestrian pathways affected by construction traffic.

5.3.2 Project Manager

The Contractor will be responsible for the overall management of construction traffic related to the Site during the construction of the Proposed Development.

The Project Manager is responsible for providing the necessary resources to fully implement any traffic management requirements including those requiring under planning conditions.

5.3.3 Traffic Management Coordinator

The Traffic Management (TM) Coordinator will be responsible for:

- Review of Contractor Method Statements with the Construction Manager to confirm that appropriate measures are being implemented with regards to traffic management requirements.
- Drafting / reviewing & revising traffic management plans as the construction progresses and submit same to KCC for review and approval.
- Daily overview of the traffic management practises and assists in the supervision and enforcement of relevant requirements.
- Weekly Construction Coordination meetings reviewing upcoming works that may have an impact/ change to the traffic management plan in place at the time.
- Periodic monitoring of traffic movements in the town of Tarbert associated with the construction site and reporting on same back to the construction manager.
- Running an incentive scheme that will encourage contractors and staff to carpool.

5.3.4 People Plant Interface & Logistics Coordinator

The Logistic manager will have the responsibility for:

- Planning site set-up for moving labour, plant, and materials around site efficiently (e.g. hoarding, gates, site accommodation, cranes, hoists, security, temporary services, material delivery and waste management strategy, catering).
- Planning internal and external logistics routes through the project phases focusing on separation of vehicles, machinery and people including lay down areas and offloading points. External logistics planned in conjunction with the traffic management coordinator.
- Managing all movements to and from site and keeping associated records.
- Providing logistics instruction to all project suppliers.
- Describing the characteristics of the site, including site access / egress, storage capacity and arrangement by programme, labour, hoists, cranes etc.
- Using the received notification of incoming transport to produce daily, weekly and long-term movement's plans.
- Controlling the materials in and out of site.
- Plan and integrate with key contractors to meet the needs of the planned programme and deconfliction of onsite space and time where appropriate.

- Assisting in the evaluation of potential logistic suppliers and appropriate delivery management booking systems.
- Be capable of managing sub-contractors to deliver their package of goods or services.
- Enforcing the full use of the organisation's delivery management system.

5.3.5 **Project Environmental Consultant (PEC)**

The PEC will have the responsibility to assist the contractors in relation to the CTMP requirements and ensure that the proposed mitigation measures are implemented and that impacts and nuisance are kept to a minimum.

5.3.6 Contractors

All Contractors, and other site personnel, on the project will adhere to the following principal duties and responsibilities:

- To co-operate fully with the site management in adherence to the CTMP.
- To conduct all their activities in a manner consistent with regulatory and best environmental practice.
- Adhere fully to the requirements of the traffic movement restrictions.

5.3.7 Visitors

Visitors to the Site have a responsibility to adhere to all site safety procedure and adherence to the construction access routing and restrictions.

5.3.8 Authority Liaison and Approvals

A detailed CTMP will be produced as part of the contractual agreements for the construction of the Proposed Development. The CTMP will be agreed with KCC before implementation and take recognition of local requirements. The plan will include measures to direct construction traffic, as much as practicable, along the upgraded road from Tarbert to the Site rather than along the road from Ballylongford to the Site.

5.4 Legal Requirements

The CTMP and any subsequent revisions will follow the following legal requirements:

- Traffic Signs Manual, issued by the Department of Transport, Tourism and Sport (November 2021), Chapter 8 Temporary Traffic Measures and Signs for Roadworks (August 2019).
- Guidance for the Control and Management of Traffic at Road Works 2nd edition, issued by the Department of Transport, Tourism and Sport (2019).
- Design and Site Management Requirements of the SHWW (Construction) Regulations 2013 issued by the Health and Safety Authority. Roads Act 2007.
- Road Traffic Act 1961 to 2014.
- Safety Health and Welfare at Work (General Application) Regulations 2007 (Chapter 1 of Part 7: Safety Sign at Places of Work) (amended 2010).
- Road Traffic (Construction, Equipment and Use of Vehicles) Regulations 2010.
- Specification TS4 Guidelines, Certification Scheme, and Specification for the Construction of Traffic Signs, Department of the Environment, Community and Local Government (2001).

6 Contingency Arrangements

6.1 Emergency Contacts

In the event of any emergency, all communications shall be managed in accordance with the Emergency Response Plan for the Site.

In the event of an emergency during the proposed works and traffic management arrangements the Client shall immediately inform KCC.

Emergency contacts are detailed in Table 6.1.

Organisation	Contact name	Details
Emergency	Officer in charge	112 or 999
Kerry County Council Traffic Services	Roads & Traffic Department	066 7183588
Local Garda Station - Tarbert	Officer in charge	068 36101

All incidents / accidents which occur will be reported in accordance with the requirements of the Health and Safety Plan produced for the construction phase of the Proposed Development.

6.2 Risk Control Mitigation Measures

To minimise the potential for any accidents / incidents resulting from construction traffic activities, the following measures will be implemented onsite:

- Logistics management will be put in place.
- Potential hazards associated with the interaction of road traffic and work site personnel have been eliminated by excluding such traffic from entering the work site.
- Traffic control will be in place for all vehicles entering and exiting the site.
- Parking will be allowed only in designated parking areas on site.
- Segregated pedestrian walkways will be introduced.
- Public pedestrian access will be restricted throughout the proposed works.
- Access to the site will be strictly controlled with all personnel being required to have a Safe Pass and to have undergone a specific Sisk Site Safety Induction before being allowed into the site.
- Traffic on the site will remain on hardcore areas wherever possible. Where this is unavoidable, traffic exiting the Site will go through a wheel wash.
- All plant and equipment will be fitted with flashing amber warning lamps and hazard lights and will be required to have reversing alarms for operations within the work site.
- The need for reversing vehicles, will be reduced by introduction of one-way system.
- Speed limit of 15km/h will be put in place on the construction site.
- Safe working procedures will be followed by plant and vehicles required to enter and leave the construction site into trafficked lanes.
- All workers will be required to wear high visibility reflective protective clothing.
- Site foreman and supervisors will be in two-way communication with each other and the traffic controllers for the duration of the work shift.

- The construction Health and Safety Plan will set out how health and safety is to be managed during the construction stage
- Site equipment within the work area that may have an impact on any emergency services requiring access to an incident will be cleared from the area as quickly as necessary.
- HGV trips are anticipated to arrive and depart the site at a uniform rate throughout the day, to avoid pressure on the morning and evening peak hour periods. Further to this it is proposed that as per the STEP Power Station application *'No HGV traffic will be allowed pass the existing school on the Coast Road at Tarbert for 20 minutes before and 10 minutes after the opening and closing times of the school. The elimination of passing HGV traffic during these time periods will ensure the continued safe delivery and collection of children at the school.'*

7 Summary Statement

7.1 Summary

The CTMP represents a commitment to satisfy reviewing authority requirements and sets out proposed traffic management and contingency planning measures to enhance road safety and limit adverse effects of construction works and construction traffic on the existing road network and the communities it serves.

It is anticipated that once the contractors are appointed, further useful information would become available, including a finalised construction programme. Such details would be submitted to KCC for information and/or agreement as appropriate.



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