North South 400 kV Interconnector Development

ESB Networks

Construction Environmental Management Plan

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Change History of Report

Date	New Revision	Author	Summary of Change

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EXECUTIVE SUMMARY

The scope of the Construction Environmental Management Plan (CEMP) for the North South 400kV Interconnector Development (hereafter referred to as "the development"). This development received a grant of planning from An Bord Pleanála (ABP) in December 2016 (ABP Planning Ref: 02.VA0017). This development includes:

- Construction of a new 400 kV overhead line from structure no. 103 to structure no. 410 in the Republic of Ireland, counties, Monaghan, Cavan and Meath;
- Installation of new HV equipment and supporting civil works in Woodland 400 kV Station; and
- Construction of the Material Storage Yard.
- To ensure measures identified during the planning phase of the development will be applied in practice to the development.

The CEMP (this document) describes the construction methodologies for the storage yard, the overhead line and the substation works and addresses anticipated environmental risks throughout the duration of the development. It incorporates all environmental controls and mitigation measures that will be implemented during the construction phase of the development, as indicated in Condition 3. The CEMP should be read in conjunction with future CEMP Addendums-yet to be submitted to Local Authorities. See Section 1.3 on the approach to CEMP. A Traffic Management Plan and a Resource Waste Management Plan (RWMP) and associated addendums also accompany the CEMP, in line with the requirements of Condition 3.

1 INTRODUCTION

This Construction Environmental Management Plan (CEMP) is being prepared for the sections of the North South 400kV Interconnector Development in the Republic of Ireland specifically those that traverse the local authority boundaries of Monaghan County Council, Cavan County Council and Meath Council. This development received a grant of planning from An Bord Pleanála (ABP) in December 2016 (ABP Planning Ref: 02.VA0017). Please refer to Section 2 of the CEMP for a description of the permitted development.

The CEMP outlines the environmental management practices to be followed during both the pre-construction and construction phases of the development. It includes specific details on how the proposed mitigation measures will be implemented. The aim is to ensure that the work is carried out in a way that minimises environmental impact. These practices are aligned with the planning conditions and the information provided in the Environmental Impact Statement (EIS) and the Natura Impact Statement (NIS), which form part of the planning application and inform the content of this CEMP.

The CEMP is a 'live' document to be adopted by the appointed contractor(s). It will be subject to ongoing review throughout the construction phase of the permitted development.

1.1 SCOPE OF THE CEMP

The scope of the CEMP for the permitted development includes:

The development comprises the portion of the permitted interconnector occurring within the Republic of Ireland in counties Monaghan, Cavan and Meath.

The permitted development, 103.35km long, consists of the following principal elements:

- A new single circuit 400 kV overhead transmission line (covering approximately 100.5km in the counties of Monaghan, Cavan and Meath).
- The proposed transmission line crosses the jurisdictional border with Northern Ireland at two points - from the townland of Lamar, County Monaghan into the townland of Crossbane, County Armagh and back into the townland of Lemgare, County Monaghan. This transmission line comprises 299 No. new lattice steel support structures (ranging in height from approximately 26m to 51m over ground level), with associated conductors, insulators, and other apparatus.
- Modifications are required to 3 no. existing 110 kV overhead lines.
- The addition of a new 400 kV circuit for approximately 2.85km along the currently unused northern side of the existing Oldstreet to Woodland 400 kV transmission line.
- Associated works within the existing ESB Woodland 400 kV Substation, in the townland of Woodland, County Meath.
- A temporary construction material storage yard which will be located in the townlands of Monaltyduff and Monaltybane, Carrickmacross, County Monaghan.

1.2 PURPOSE OF THE CEMP

The preparation of a CEMP for this development serves several key purposes:

- It fulfils a mitigation measure outlined in the Environmental Impact Statement (EIS) prepared for the development.
- It ensures compliance with Planning Condition No. 3 of the granted approval (December 2016 – ABP Planning Ref: 02.VA0017).
- It aligns with internal ESB Environmental Management System (EMS) requirements, which mandate the preparation of a CEMP for all ESB developments.

The CEMP and associated Condition 3 documentation sets out the environmental management measures for the construction phase of the permitted development. The wording on Condition 3 is included in **Table 2.1 - *Planning Conditions Ref: 02VA0017*.**

As outlined above, the EIS submitted as part of the planning application remains the primary reference for impact assessment of construction activities.

The purpose of the CEMP is as follows:

- Ensuring that good construction practices are adopted throughout the construction of the proposed development
- Conducting activities in an environmentally responsible manner
- Ensure that pertinent environmental mitigation is in place during construction work
- Minimising the production of all waste as far as practicable and disposing of all residual wastes in a safe responsible and legislatively compliant manner
- Establish a monitoring and reporting scheme for environmental management during construction
- Identifying key roles and responsibilities for environmental audits & inspections

1.3 APPROACH TO THE CEMP

As outlined in Section 7.3.4 (Volume 3B) of the EIS, the proposed linear development is expected to require a construction period of approximately three years. It will be carried out in a number of different work packages and it will involve different contractors. Nonetheless, the core principles underpinning the initial environmental, traffic, and resource and waste management plans outlined in this submission will remain consistent across all work packages and throughout the entire construction period. The plans will be continuously updated as live documents as the development progresses to ensure they reflect the upcoming work packages, current environmental conditions, current legislation and best practices.

Consultation with Local Authorities

Since March 2024, ESB has engaged in ongoing consultation with Monaghan, Cavan, and Meath County Councils regarding the agreed approach to the discharge of planning conditions. During these meetings, in relation to Condition 3, it was agreed that ESB would submit a Construction

Environmental Management Plan (CEMP), a Traffic Management Plan (TMP), and a Resource and Waste Management Plan (RWMP), collectively encompassing the entire development.

Due to the linear nature of the development in excess of 100km and estimated 3 year construction programme, it is impractical to provide information in this document for work packages that may not start for months or years into the future. In order for a CEMP, TMP and RWMP to reflect real time conditions, they need to be based on the most current information available in advance of construction of a particular work package. For example:

- Preconstruction site surveys at specific sites are typically carried out several weeks in advance of construction commencing.
- Similarly, a traffic management plan should be based on the road network and road conditions that exist close to the time when construction will commence.

In order to address these issues, it was agreed with the county councils that the management plans to be submitted at this time would focus on the principles that underpin such management plans. These are not site specific but are applicable in any construction project.

It has been agreed that the main Construction Environmental Management Plan (CEMP), Traffic Management Plan (TMP) and Resource Waste Management Plan (RWMP) documents and the first work package addendum(s) will be submitted to local authorities for approval. The material storage yard will be the first work package associated with the development, so initially, approval of all documents will be sought before construction commences.

This phased approach to delivery of the work programme is discussed in Chapter 7.2 (Volume 3B) and also in Chapter 13.6.1 (Volume 3C) of the Environmental Impact Statement (EIS) where it states that consultation with local authorities are required on the construction programme.

Work Packages

Given the extensive linear nature of the permitted development, it will be divided into discrete *work packages*;

- The initial work package will focus on the establishment of a Material Storage Yard near Carrickmacross (Work Package No. 1),
- Subsequent packages—Work Packages No. 2, No. 3, etc. will concentrate on the construction of the 400 kV overhead line towers and subsequent stringing of tower sections.
- Upon completion of tower construction, later work packages will include the completion of the stringing of the overhead line and the civil and electrical works associated with Woodland Substation.

Addendums

The overhead line route will be segmented accordingly into each work package, accompanied by tailored supplementary addendum(s) covering CEMP, TMP and RWMP site specific information.

In each case, all addendum(s) will be submitted to the relevant local authority for agreement prior to the commencement of work packages.

As noted above, the first addendum to be submitted for agreement is the Material Storage Yard, which will follow the submission of the main documents.

Each addendum will allow up to date information to be submitted within months prior to construction of each work package over the three-year period.

1.4 PRELIMINARY CONSTRUCTION PROGRAMME

A preliminary construction programme for the development is outlined in **Table 1.1** on the following page. On appointment of construction contractor(s), this programme will be revised in consultation with ESB and Local Authorities.

Phase (Planning Permission)	Activity	Description	Methodology
Prior to Commencement of Material Storage Yard	Pre-Confirmatory Ecology Surveys	Otter, Badger	Completion of Survey
	Road Condition Survey	Pre-condition survey of roads surrounding the material storage yard	Completion of Survey
Prior to Commencement of Overhead line Towers	Pre-Confirmatory Ecology Surveys	Otter, Badger, Kingfisher, Whooper Swan	Completion of Survey
	Geophysical Surveys	103 - 105, 107 - 110, 114 - 118 (12 sites)	Completion of Survey
	Road Condition Surveys	Pre-condition surveys of all roads in work package area	Completion of Survey
Prior to Commencement of Stringing	Pre-Confirmatory Ecology Surveys	Whooper Swan	Completion of Survey
Construction	Material Storage Yard Civil Construction	Stage 1: Access Road	- Create access roads into site - topsoil stripping, stockpiling soil, laying geotextile membrane, importing and laying stone - Erect silt fencing locally as required - Vegetation clearance
		Stage 2: Excavate drainage routes and settlement pond	- Excavate and install drainage runs across the site and from berms - Excavate swale and pond to formation level and remove spoil to berm area or stockpile area for removal offsite or storage onsite - Dewatering procedures to be adhered to (refer to schematic within CEMP document)
		Stage 3: Erect Site Fencing & Noise Barrier	- Install palisade fence along perimeter of site - Install or erect noise barrier along south, east and west boundaries - Erect silt fencing locally as required
		Stage 4: Create hardstand & Load bearing areas	- Topsoil stripping to prepare hardstand areas for stone - install oil interceptor in drainage lines - Create temporary stockpiles for offsite disposal or onsite storage for reuse
		Stage 5: Mobilisation	- Prefabricated units, welfare units, waste area, refuelling area, pedestrian site fencing, car parking to be setup at Compound area. - Delivery of tower infrastructure will occur on a phased basis pending on construction timings of OHL
		Stage 6: Temporary Berm Works and Compound Works	- Increase / enhance existing access route and hard standing for new access route & compound - Install silt fencing to perimeter of proposed temporary berm

Phase (Planning Permission)	Activity	Description	Methodology
	Material Storage Yard Civil Construction		- Excavate and install land drain and catchpits to perimeter of proposed berm. Excavated spoil to be stored within footprint of berm. - Strip topsoil in compound area as required - Add Stone to compound area and access tracks as required.
Construction		Stage 7: Remaining Civils Works	- Relevant to all stages – works will be planned such that exposed sections of excavations are reduced/controlled to limit risk of exposure to elements and groundwater ingress - Dewatering procedures to be adhered to (refer to details and schematic within CEMP document)
	Material Storage Yard Operational Use	Operational as use of Material Storage Yard	- Site is ready to be used, as described in planning for the construction of the overhead lines. - Offloading equipment area and transporting material to designated storage space onsite - Delivery of overhead infrastructure will occur on a phased basis pending on construction timings of OHL
	Overhead Line Construction	Stage 1: Preparatory Site Work including Enabling Works, Guarding & Services	
		Stage 2: Foundation Installation	
		Stage 3: Tower Assembly and erection and preliminary reinstatement	
		Stage 4: Conductor / Insulator Installation	
		Stage 5: Final Reinstatement of Land	
	Woodland Substation	Civil Construction	
		Electrical Installation	
Commissioning	Overhead Line	Commissioning	
	Woodland Substation	Commissioning	
Operational	North - South Interconnector 400 kV OHL	Energised	

Table 1.1: North South Interconnector Development – Preliminary Construction Programme

2 THE DEVELOPMENT

2.1 SITE & PROJECT OVERVIEW

This development consists of the construction of a new 400 kV overhead line linking the existing Woodland 400 kV substation, located approximately 8 km south of Dunshaughlin in Co. Meath, with a planned 400 kV substation, located approximately 3 km north of the village of Moy in Turleenan, Co. Tyrone.

The general alignment of the overhead line route from Tyrone in Northern Ireland to Co. Meath in the Republic of Ireland (ROI) is approximately 137.6 km in length.

This CEMP covers the new 400 kV overhead line in the ROI from structures 103 to 410, the material storage yard and the substation works at Woodland substation.

The following is a high-level breakdown of structures and sites per Local Authority:

- **Monaghan County Council (MoCC)**

  The Overhead Line (OHL) extends from the jurisdictional border with Northern Ireland for a distance of approximately 38 km, supported by 109 structures (Tower 103 to Tower 211). It includes an associated temporary construction material storage yard located on a site of approximately 1.4 ha in Carrickmacross, County Monaghan.

- **Cavan County Council (CCC)**

  The development extends for a distance of approximately 11 km, supported by 28 structures (Tower 212 to Tower 239).

- **Meath County Council (MeCC)**

  The development extends for a distance of approximately 54 km, supported by 162 structures (Tower 240 to Tower 401). It also includes the addition of a new 400 kV circuit for approximately 2.85km along the currently unused (northern) side of the existing double-circuit Oldstreet to Woodland 400 kV OHL, extending eastwards from Tower 402 to Tower 410 at the Woodland Substation, County Meath.

  The Turleenan – Woodland 400 kV line section in the Republic of Ireland will comprise of 299 no. new lattice steel support structures made up of:

  - 220 no. Intermediate Towers
  - 77 no. Angle Towers
  - 2 no. Transposition Towers

Figure 2.1 & Figure 2.2 below present a condensed map depicting the proposed OHL route in Cavan, Monaghan and Meath areas respectively.

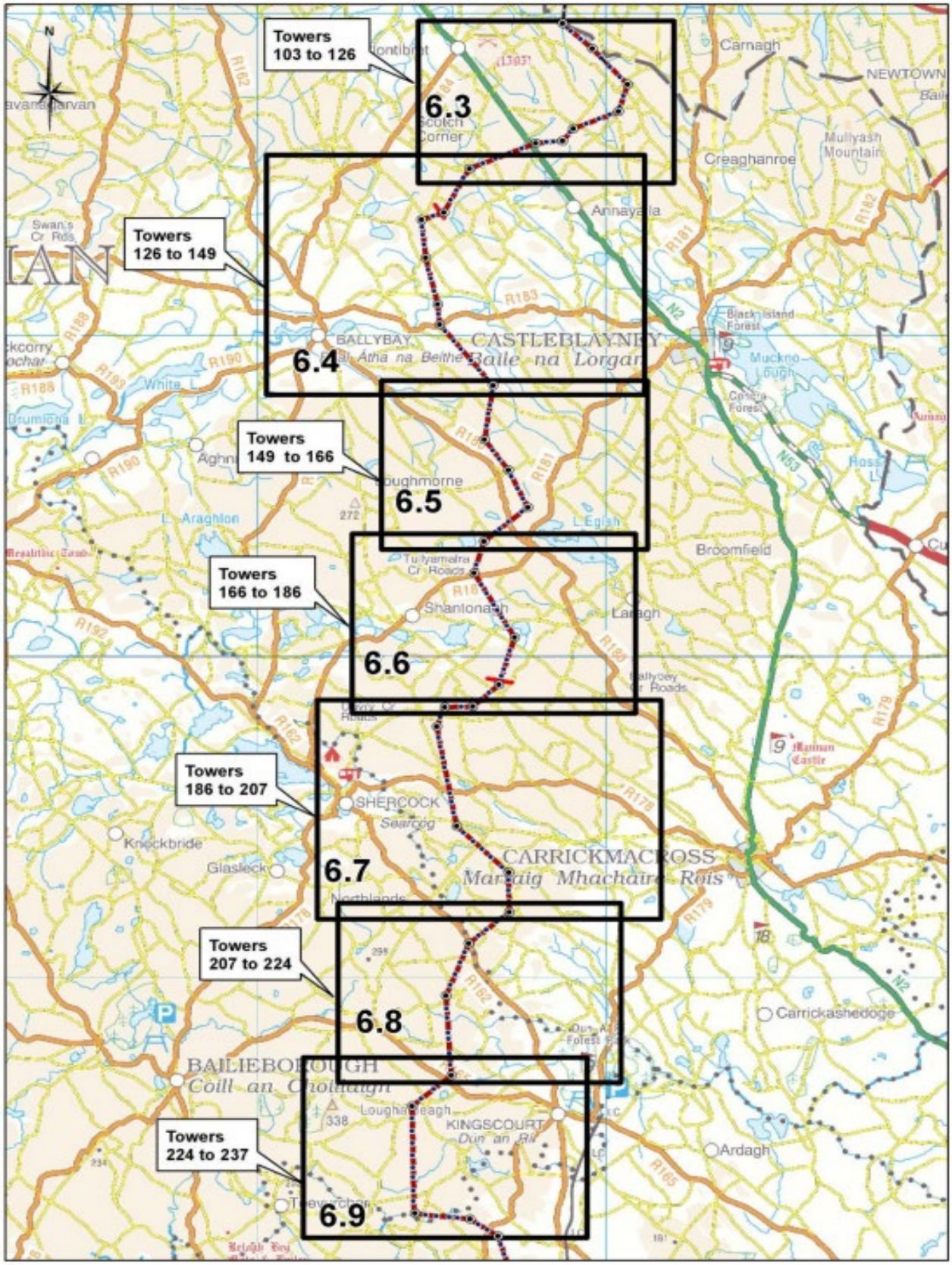

Figure 2.1: Cavan/Monaghan OHL Route

Figure 2.2: Meath OHL Route

2.2 PLANNING COMPLIANCE

This CEMP was developed in compliance with nine conditions of the grant of planning, Ref no. 02.VA0017 (ABP Order).

As outlined in Section 1.2, the CEMP (along with the TMP and R&WMP) has been prepared to demonstrate compliance with Condition 3 of the planning grant. The remaining eight planning conditions issued as part of the ABP order are listed in **Table 2.1.** The CEMP has been developed to address all requirements associated with these conditions. **Table 2.1** presents the full wording of each condition from the grant of planning, alongside references to the relevant subsections within the CEMP where responses and updates are provided.

Table 2.1: Planning Conditions Ref: 02VA0017

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
1	(a) The proposed development shall be carried out and completed in accordance with the plans and particulars lodged with the application for approval to An Bord Pleanála on the 9th day of June 2015, and the further information, received by An Bord Pleanála by way of the 'Response to the Issues Raised in Submissions/Observations' document lodged on the 19th day of October 2015, except as may otherwise be required in order to comply with the following conditions. Where such conditions require details to be agreed with the relevant planning authority, the undertaker shall agree such details in writing with the planning authority prior to commencement of development and the development shall be carried out and completed in accordance with the agreed particulars. (b) All environmental mitigation measures set out in the Environmental Impact Statement, Natura impact statement, and associated documentation submitted by the undertaker with the application and the further information received by An Bord Pleanála by way of the 'Response to the Issues Raised in Submissions/Observations' document lodged on the 19th day of October 2015, shall be implemented in full, except as may otherwise be required in order to comply with the conditions of this order. *Reason: In the interest of clarity and environmental protection.*	a.) Noted. b.) All environmental related documents submitted for planning have informed the CEMP throughout. Mitigation measures contained in the EIS and NIS documents have been listed in **Appendix 4** and will be complied with throughout the development
2	Prior to the commencement of development, an Agricultural Liaison Officer or Officers shall be appointed and shall be responsible for liaison with landowners, prior to and during the construction phase of the project, to identify and address issues of concern to individual landowners including disease protocols, if relevant, in accordance with the measures set out in the application for approval, and thereafter for the operational phase of the development.	The person(s) are to be appointed prior to commencement. Contact details will be updated in this CEMP and additional CEMP Addendums for subsequent work packages

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
	Reason: To ensure the satisfactory completion and operation of the development in the context of agricultural activities.	
3	Prior to the commencement of development, a construction and environmental management plan, a traffic management plan and a waste management plan shall be submitted to, and agreed in writing with, the relevant planning authority following consultations with relevant statutory agencies, including Inland Fisheries Ireland and the Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, and Irish Water. This plan shall incorporate the mitigation measures indicated in the environmental impact statement and shall provide details of intended construction practice for the proposed development, including: a) details of appropriate geophysical survey in respect of construction sites in the vicinity of towers 103 to 118, b) measures to demonstrate compliance with the relevant regional waste management plans,	This Construction Environmental Management Plan (CEMP) document and accompanied Traffic Management Plan (TMP) and Resource & Waste Management Plan (RWMP) addresses this condition. As well these three main documents, respective Addendum documents for each work package will be submitted to Local Authorities for agreement prior to construction works commencing. a) Ground Penetrating Radar (GPR) surveys have been undertaken at 4 tower locations to date (Towers Nos. 106, 111, 112 and 113). GPR surveys will be carried out at the remaining 12 sites prior to works commencing on the tower structures. Details and findings from these surveys will be documented in future Addendums to the relevant work packages for the towers listed. b) Condition addressed in accompanying Resource & Waste Management Plan and RWMP Addendum No. 1. Note, since these conditions were granted in 2016, the regional waste management plans have

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
		been superseded by the National Waste Management Plan for a Circular Economy (2024 – 2030). Details are in the accompanying RWMP.
	c) site specific arrangements for each temporary access route, to include, where necessary: i. arrangements for stepping down vehicle size, ii. arrangements for off-loading of materials, iii. short term road closures, iv. the phasing of construction works which are accessed by single lane carriageways, and v. the arrangements for the transfer and management of concrete, including wash out facilities,	c) Details are included in the accompanying Traffic Management Plan and TMP Addendums. Site specific access routes will be contained in TMP Addendum's for each work package. i) Section 3.2.2 of TMP ii) Section 3.2.3 of TMP iii) Section 4.9 of TMP iv) Section 4.3 of TMP v) Section 4.4 of CEMP addresses the management of concrete wash water.
	d) arrangements for the completion of pre and post-construction road surveys. The pre-construction survey shall be completed three months prior to the commencement of the development,	d) Pre and Post Condition Surveys will be completed by contractor(s) prior to commencement of development. Details to be updated in the live CEMP and respective Addendum documents and also Section 4.8 of TMP
	e) details of the locations for water quality monitoring and the proposed water quality monitoring protocols in respect of surface water bodies,	e) Locations for water quality monitoring for the material storage yard are included in CEMP Addendum No. 1. A monitoring regime will be included in future overhead line addendums, in line

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
		with IFI consultation and ecological surveys. See Section 4.3 & Table 2.2
	f) details of monitoring of water levels and water quality in wells within 100 metres of the proposed alignment,	f) The EIS states monitoring of water levels and water quality monitoring in wells (100 m of the proposed alignment) should be completed if dewatering of excavations takes place. Ecology surveys and Engineers Walk over surveys will document all suspected wells within 100 m of the alignment. Details of findings will be included in future overhead line addendums with associated monitoring procedures where applicable.
	g) means to control dust at construction sites, and	g) Dust Management is addressed in this CEMP and associated Addendums. See Section 4.6 of this document and Section 4.14 of the TMP
	h) details of liaison procedures to resolve any issues or community concerns.	h) As Transmission Systems Operator (TSO), Eirgrid will carry out the function of Community Liaison Officer (CLO) and Agriculture Liaison Officer (ALO). See Section 3.1 for details. Contractors will also have a responsibility in recording any complaints and addressing them.

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
	Monitoring of the construction phase of the development shall be carried out by a suitably qualified person to ensure that all mitigation measures contained in the environmental impact statement and the Response to the Issues Raised in Submissions/ Observations document are implemented. A record of daily checks that works are being undertaken in accordance with the construction environmental management plan shall be available for inspection by the relevant planning authority. Monitoring reports shall be submitted to the relevant planning authority and other relevant statutory bodies in accordance with the requirements of the relevant planning authority. *Reason: In the interest of protecting the amenities of the area, sustainable waste management, preventing pollution of surface waters, protection of existing habitats, and traffic safety.*	- See Section 5.1.2.3 & 5.1.1.4 - The ECoW and Environmental Officer are responsible for the implementation and effectiveness of mitigation measures during the construction phase - See Section 7.4 - Record Keeping - Environmental checks and monitoring will be carried out by qualified personnel. Daily checks will be recorded and available for inspection by local authorities. - Monitoring reports, upon completion, to be sent to relevant planning authorities.
4	Prior to the commencement of development, the undertaker shall agree with the relevant planning authorities, following consultation with the National Parks and Wildlife Service, a protocol for pre-construction verification surveys. In the event of these surveys identifying species of conservation interest, measures for their protection shall be incorporated into the construction environmental management plan.	ESB communicated a proposed protocol for pre-construction verification surveys to the NPWS in June 2021. A revised protocol was devised by ESB and communicated to NPWS on June 16th, 2025. This approach to be applied throughout all pre-construction verification surveys, upon agreement by NPWS

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
5	The undertaker shall facilitate the archaeological appraisal of the site and shall provide for the preservation, recording and protection of archaeological materials or features which may exist within the site. In this regard, the undertaker shall: (a) notify the relevant planning authority in writing at least four weeks prior to the commencement of any site operation (including hydrological and geotechnical investigations) relating to the proposed development, and (b) employ a suitably qualified archaeologist prior to the commencement of development who shall assess the site and monitor all site development works. The assessment shall address the following issues: I the nature and location of archaeological material on the site, and ii. the impact of the proposed development on such archaeological material. A report, containing the results of the assessment, shall be submitted to the relevant planning authority and, arising from this assessment, the undertaker shall agree in writing with the planning authority details regarding any further archaeological requirements (including, if necessary, archaeological excavation) prior to commencement of construction works. In default of agreement on any of these requirements, the matter shall be referred to An Bord Pleanála for determination. Reason: *In order to conserve the archaeological heritage of the area and to secure the preservation (in-situ or by record) and protection of any archaeological remains that may exist within the site*.	See **Section 5.1.1.5** An Archaeologist will be appointed for all topsoil stripping at the Material Storage Yard and for all future topsoil stripping at OHL tower locations

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
6.	Prior to commencement of development, the undertaker shall agree a monitoring programme for the Whooper Swan, with the relevant planning authority, following consultation with the National Parks and Wildlife Service. The monitoring programme shall be based on standard good practice and shall include details in respect of location, frequency, duration and methodology. A copy of the results of the monitoring programme shall be submitted to the relevant planning authority and to the National Parks and Wildlife Service. *Reason: To ensure appropriate monitoring of the impact of the development on Whooper Swans.*	See **Section 4.7.2.2** **Appendix 4** Mitigation Table – **Ref no. 13.4 – 13.9** ESB are currently in consultation with NPWS on survey methods and appropriate monitoring programme. All locations where flightlines have been previously identified will be re-surveyed during the pre-construction phase. Surveys will be conducted at all sites identified, monthly between October and April when Whooper Swans are present in the area. Future Addendum's for overhead line work packages will include specific survey methodologies following consultation.
7	Prior to the commencement of development, details of the external appearance of the construction materials storage yard, and also the restoration of the site, including a time scale for implementation, shall be submitted to, and agreed with, the relevant planning authority. *Reason: In the interest of visual amenity.*	Details requested in Condition 7 were compiled in a submission to Monaghan Co Co. and issued in April 2025. ESB responded to letter from Monaghan Co. Co dated June 25th regarding particulars of Condition 7. A submission in compliance to this condition was made by ESB in April 2025. Queries were received by Monaghan Co Co on 25th June. ESB

Planning Condition No.	Conditions under Planning ref 02.VA0017	Addressed in:
		are currently preparing an updated response to this condition and will submit to Monaghan Co Co in due course.
8	All road surfaces, culverts, watercourses, verges and public lands shall be protected during construction and, in the case of any damage occurring, shall be reinstated to the satisfaction of the relevant planning authority. Details in this regard, including a survey prior to construction and post construction, shall be agreed with the relevant planning authority prior to commencement of development. *Reason: In order to ensure a satisfactory standard of development.*	CEMP contains details associated with surface water management - applying measures outlined in **Appendix 4 - Ref no. 6.5– 6.14 & Section 4.3 – Water Protection & Management** **Section 3.2.2** on road condition surveys - additional detail is expanded in accompanying Traffic Management Plan and TMP Addendum 1 and addressed under Condition 3 (d) of this table.

2.3 EXISTING ENVIRONMENT

This section of the CEMP summarises the existing conditions of the material storage yard and overhead line tower locations, as set out in the EIS submitted as part of the planning application. The EIS also contained information obtained from Geological Surveys of Ireland Database (GSI) 2023. [1]

2.3.1 HYDROLOGICAL

The following section provides a summary of the main hydrological catchments and receptors along the Overhead line Route, Material Storage Yard and the Woodland 400kV substation locations.

Overhead line Route

The line route has been designed in order to locate temporary access routes and tower locations away from sensitive rivers, where possible.

It is not proposed to undertake any in-stream works along the line route.

Several tributary rivers or streams to the Boyne and Blackwater have also been identified in the EIS which are traversed by the permitted overhead line route and may require mitigation. The locations are listed below in **Table 2.2.**

Table 2.2: Tributaries with hydrological connectivity to European Sites

Tower No.	Tributary	EIS Drawing
251 – 252	Kilmainham River	Volume 3B Figure 17
313 - 314	Stream	Volume 3B Figure 24
317 - 318	Stream	Volume 3B Figure 25
344 - 347	Clady River	Volume 3B Figure 28
350 - 351	Stream	Volume 3B Figure 28
358 - 359	Stream	Volume 3B Figure 29
376 - 377	Boycetown River	Volume 3B Figure 31

[1] Geological Survey Ireland Spatial Resources (arcgis.com)

Woodland Substation

The Woodland Stream, a tributary of the Tolka river, is located on the northern site boundary of the substation. The Woodland Stream discharges into the Moyleggan Stream to the east. This then flows southeast to the Tolka River for a downstream distance of 6.9km.

The Tolka river flows into the South Dublin Bay and River Tolka Estuary SPA approximately 25.8km south-east of the study area, and then into the North Dublin Bay SAC approximately 28.5km south-east of the study area.

There are also unnamed waterbodies (streams and ditches) located approximately 1.5 km south of the Woodland Substation.

Material Storage Yard

The material storage yard for the overhead line (OHL) elements of the development is to be located in the townlands of Monaltyduff and Monaltybane, Carrickmacross, County Monaghan.

There are no sensitive aquatic ecological receptors occuring in proximity to the site.

There is a narrow drainage ditch that lines the east of the construction site. This provides a weak connectivity discharge into the River Proules, located approx. 1km east of the site.

The River Proules forms part of the Monalty Lough pNHA (Site Code 001608) located approx. 1km downgradient of the temporary construction material storage yard.

2.3.2 ECOLOGY

2.3.2.1 Designated Sites

A number of Designated European Sites are located in the vicinity of the permitted development. No structures along the overhead line route are located within any European sites. The material storage yard is also not located or located near any European site.

Potential impacts of the permitted development have been identified at the River Boyne and Blackwater SAC/SPA as these are over sailed at two locations. There are also a number of tributaries to the SAC/SPA locations and remote SPA sites which have potential impacts highlighted.

River Boyne and Blackwater SAC and SPA

The OHL will cross the River Boyne and River Blackwater candidate Special Area of Conservation (SAC) and Special Protection Area (SPA) at two locations:

- The River Boyne between Towers 355 and 356 in the townlands of Rathnally and Trubley near Trim; and
- The River Blackwater between Towers 310 and 311 in the townlands of Castlemartin and Teltown close to Donaghpatrick Village.

Tower locations are located at a distance from the boundaries of the SAC / SPA, please see table below:

Table 2.3: Proximity of Towers to European Sites

Tower No.	Distance to European Site	Name of European Site	EIS Drawing
309	~85m	River Boyne and River Blackwater SAC / River Boyne and River Blackwater SPA	Volume 3B Figure 24
310	~90m	River Boyne and River Blackwater SAC / River Boyne and River Blackwater SPA	Volume 3B Figure 24
311	~190m	River Boyne and River Blackwater SAC / River Boyne and River Blackwater SPA	Volume 3B Figure 24
355	~6m	River Boyne and River Blackwater SAC / River Boyne and River Blackwater SPA	Volume 3B Figure 29
356	~160m	River Boyne and River Blackwater SAC / River Boyne and River Blackwater SPA	Volume 3B Figure 29

Whooper Swans

Lough Oughter and Associated Loughs SPA (Site Code: 004049), located at a distance of 32km from the permitted development, have populations of Whooper Swan as a qualifying interest for this site.

However, despite the extensive distance of the SPA sites from the development, Whooper Swans were highlighted in the An Bord Pleanála (the Board) scoping opinion and during consultation with Bird Watch Ireland and National Parks Wildlife Service, as extensively using the study area, in numbers that can exceed nationally significant levels.

As detailed in **Vol 3C of the EIS & Table 6.1,** 7 no. years of extensive surveys were conducted within the study area, including all route corridors considered in earlier stages of the project development and the wider landscape.

Surveys were conducted monthly from October to April to encompass the entire period that wintering Whooper Swan are present in Ireland. Surveys were conducted every year from winter 2007 / 2008 to 2013 / 2014 inclusive. Results of flight lines observed across the overhead line route are included. These are located in the following areas:

- Ballintra/Tonyscallon/Toome or Crinkill Lough;
- West of Lough Egish/ eastern Lough Morne and
- Raferagh Pond/Mill Lough/Comeragh Lough.

Please refer to **Section 4.7.2.2** on Ecological Management of Whooper Swans.

2.3.2.2 Ecological Surveys

The following sections provides details on more recent ecological surveys that have been undertaken since 2015 EIS related surveys:

Material Storage Yard Survey (2025)

ESB Ecologists undertook an ecological walkover survey at the site and surrounding environs in May 2025.

The following is a summary of the main items identified on site:

- The principal habitat that occurs at the permitted construction material storage yard comprises improved agricultural grassland being managed for grazing.
- The grass swathes are dominated by perennial rye grass (*Lolium perenne*) with frequent red clover (*Trifolium pratense*), buttercup (*Ranunculus acris*) and dandelion (*Taraxacum vulgaria*).
- Low managed hedgerows and post and rail fencing occur around much of the perimeter of the site with semi-natural hedgerow occurring along the southern boundary.
- Hedgerows were dominated by hawthorn (*Cretaegus monogyna*) and sycamore (*Acer psuedoplatanus*) with frequent bramble (Rubus fructicosus), elder (*Sambucus nigra*), honeysuckle (*Lonicera periclymenum*) throughout. Hedgerow understory was dominated by speedwells (*Veronica persica*), herb Robert (*Geranium robertianum*), bracken (*Pteridium aquilinum*) and lords-and-ladies (*Arum maculatum*).
- Treelines were semi-mature and were dominated by hawthorn, sycamore and hazel (*Corylus avellana*). Other more rare species included ash (*Fraxinus excelsior*), elder and lodgepole pine (*Pinus contorta*).
- There was no evidence of any Annex I habitats throughout the site. The agricultural grassland is considered to be of a low ecological value
- There was no evidence of Invasive species within the site or along the peripheral environs

CEMP Addendum 1 (Material Storage Yard) contains further details on the findings of the ecological walkover survey.

Overhead Line Route Surveys (2021/2022)

Between November 2021 and February 2022, ESB employed a consultant to undertake ecological surveys at 45 no. proposed tower locations along the line.

Note, the respective areas will be further inspected prior to construction to verify ecological conditions and features, as detailed below. These inspections are also referred to as pre-confirmatory surveys, discussed in **Section 3.**

Table 2.4 below summarises the ecological findings arising from those surveys.

Table 2.4: Findings from Ecological Walkovers in November 2021- February 2022

Tower Number	Ecological Findings	Ecological Constraint	Mitigation Required
106	**Tower location is proposed immediately adjacent to a stream. Along the access route, there is a small stream and a fence that will have to be crossed when bringing the rig in.**	**Yes**	**Yes**
109 , 111, 112 & 113	No significant ecological features	No	N/A
114	Main badger sett recorded approximately 100 m north-east of tower 114, featuring at least 20 holes.	No	N/A
115 , 118, 125, 127, 128, 131 , 132	No significant ecological features	No	N/A
133	**Badger hole 45 m from proposed tower**	**Yes**	**Yes**
138	No significant ecological features	No	N/A
140	**Badger sett recorded 35 m from tower**	**Yes**	**Yes**
141 - 144 151 – 154 156	No significant ecological features	No	N/A
198 - 199	No significant ecological features	No	N/A
232	No significant ecological features	No	N/A
253 -254	No significant ecological features	No	N/A
256	No significant ecological features	No	N/A
282 -283	No significant ecological features	No	N/A
293	No significant ecological features	No	N/A
292 & 294	**Otter activity.** **Potential Japanese Knotweed cane**	**Yes**	**Yes**
296 - 298	No significant ecological features	No	N/A
314	**Bird nests recorded in hedgerow vegetation proposed to be removed for tower construction**	**Yes**	**Yes**
317 - 318	No significant ecological features	No	N/A
330	No significant ecological features	No	N/A
388	No significant ecological features	No	N/A
395	No significant ecological features	No	N/A

3 CONSTRUCTION WORKS

This section of the CEMP describes the construction works to be undertaken as part of the permitted development.

Key elements of the civil works and activities associated with the pre-construction and construction phase(s) of the development are detailed in Section 3.1 herein.

3.1 STAKEHOLDER MANAGEMENT

The following stakeholder communications to be in place prior to commencement of construction:

- Liaison with stakeholders regarding proposed environmental management of construction works
- Agricultural Liaison Officer(s) (ALO) and Community Liaison Officer(s) (CLO) shall be appointed and shall be responsible for liaison with landowners / local community to identify and address issues of concern
- Discussions will take place between the appointed Agricultural Liaison Officer and landowners to ensure awareness of the specific works
- Notices and Schedules, as well as maps confirming the position of towers as approved by the Board, will be issued to landowners
- Ecological Clerk of Works (ECoW) will liaise with National Parks and Wildlife Service (NPWS) should the acquisition of a Regulation 54 licence be required, issued under the EC (Birds and Natural Habitats) Regulations 2011 (as amended)
- Consultation to be undertaken with Inland Fisheries Ireland (IFI) and NPWS before commencing felling operations in sensitive areas

Condition 3 (h) of the planning permission states '*details of liaison procedures to resolve any issues or community concerns*'. The ALO and CLO mentioned above will have key responsibility for community engagement.

3.2 PRE-CONSTRUCTION WORKS

The following items are to be undertaken prior to construction commencing and are detailed further in the following sections.

- Pre-confirmatory surveys
  - Otter
  - Badger
  - Kingfisher
  - Whooper Swan

- Road Condition surveys
- Geophysical Surveys

3.2.1 PRE-CONFIRMATORY SURVEYS

Pre-confirmatory environmental surveys to be conducted along the site and surrounding environs prior to commencement of construction.

It is vital that surveys are carried out close to the date of commencement of works. This will better inform mitigation measures as it will allow for more accurate depiction of current habitat conditions and mammal movements.

The details of each survey to be further refined upon consultation between ESB and the developments ECoW.

The pre confirmatory surveys are to be agreed with the relevant planning authority and where necessary, the National Parks and Wildlife Service. See Section(s) **4.7.1 & 4.7.2** for further details

3.2.2 ROAD CONDITION SURVEYS

Condition 3 (d) of the planning permission states '*arrangements for the completion of pre and post-construction road surveys. The pre-construction survey shall be completed three months prior to the commencement of the development*'.

Pre- and post-construction road condition surveys will be conducted prior to the commencement of works, in accordance with standard practice and planning requirements. Any damage to roads or verges caused by construction activities will be documented, and necessary repair works will be undertaken.

The appointed contractor shall, in conjunction with the local authority, undertake:

- Additional inspections and reviews of the roads forming the haul routes one month prior to the construction phase to record the condition of these roads at that particular time. Such surveys shall comprise, as a minimum, a review of video footage taken at that time, which shall confirm the condition of the road corridor immediately prior to commencement of construction. This shall include video footage of the road wearing course, the appearance and condition of boundary treatments and the condition of any overhead services that will be crossed
- Visual inspections and photographic surveys of bridges and culverts that are along the haul roads
- Pavement condition surveys along roads forming part of the haul route. These will record the baseline structural condition of the road being surveyed immediately prior to construction. These may be requested by the local authority prior to construction

- Ongoing inspections and monitoring of the haul roads to ensure any damage caused by construction traffic is recorded and that the relevant local authority is notified throughout the course of the construction of the proposed development.

3.2.3 GEOPHYSICAL SURVEYS

Condition 3 (a) of the planning permission states *'details of appropriate geophysical survey in respect of construction sites in the vicinity of towers 103 to 118'.*

Ground Penetrating Radar (GPR) surveys have been undertaken at 4 tower locations to date (Towers Nos. 106, 111, 112 and 113). GPR surveys will be carried out at the remaining 12 sites prior to works commencing on the tower structures. Details and findings from these surveys will be documented in future Addendums to the relevant work packages for the towers listed.

3.3 ENABLING WORKS

Enabling works to be undertaken across the Material storage yard, OHL route and Substation permitted locations. Enabling works comprise the following:

- Vegetation clearance
- Site Investigation Works
- Site preparation
- Access Route preparation

3.3.1 VEGETATION CLEARANCE

- Vegetation clearance will be undertaken outside of the bird nesting period (Nesting season: March 1st - August 31st)
- Consultation will be undertaken with Inland Fisheries Ireland (IFI) and NPWS before commencing felling operations in sensitive areas (Appendix 4 – Ref no. 6.2)
- Clear felling the site, cutting back of trees and vegetation etc. to be supervised by the ECoW
- All scrub/hedgerow/broadleaf trees to be felled will be inspected by the ECoW for active nests and / or indications of breeding activity
- Pre-confirmatory bat surveys / monitoring of specific mature trees identified for felling will be undertaken by a bat specialist prior to tree cutting. In order to proceed with the felling of trees that may be identified as bat roosts, it will be necessary to acquire a derogation licence from NPWS

3.3.2 SITE INVESTIGATION WORKS

Site investigation works will be required at some tower locations prior to the construction of the towers commencing. This site investigation work will be undertaken to determine the soil properties in the area. The following site investigations may be conducted:

- Percussion or rotary coring boreholes
- Dynamic probing
- Plate Bearing tests
- Hand Shear Vane tests
- Geophysical surveys
- Soil sampling for laboratory testing

3.3.3 SITE PREPARATION

Site preparation across the development may include laying of temporary access tracks, erection of fencing, minor civil works. See examples below:

- Levelling of the tower foundation area: Where the gradient is less than 1m, and the impact is moderate, consideration will be given to levelling the site foundation area
- A 2.6m high palisade fence will be installed around the perimeter of the material storage yard while a 2m high sound barrier will be affixed to three sides of the boundary fence
- Delineation of any on-site working area (e.g. erection of temporary fencing etc.)
- Diversion of any existing utilities (e.g. underground water pipes, cables etc.).
- Erection of temporary guarding positions - Where the conductor is to be strung over roads and electricity lines, protective structures will be erected prior to the commencement of stringing. These structures will be in the form of guard poles.

3.3.4 ACCESS ROUTE PREPARATION

The following provides general details on the access routes to construction site(s):

- *Access to tower sites:* Temporary access using existing routes and access points as far as possible.
- *Access to stringing locations*: Generally from the nearby proposed angle tower to the stringing location, where the two points are in the same fields and there are no obstructions.
- *Access to guarding locations*: The guarding locations will typically be accessed by 4x4 vehicle and excavator through existing access routes

- *Access to Material Storage Yard*: A new entrance will be required from the L4700 at a central location along the southern boundary of the site. Refer to the layout drawing in Appendix 2 to view the new entrance location
- *Access to Woodland Substation*: Woodland substation is an existing station, with site entrance already in place

A detailed set of preliminary access maps were prepared and submitted as part of the planning application for the proposed development. Please refer to **EIS Volume 3B Figures 1 to 34**.

Appendix 3 provides examples of Environmental Route Maps for Intermediate and angle mast foundation structures along the overhead line route. These maps depict environmental constraints and impeding conditions as well as appropriate mitigation measures e.g. temporary culvert(s), silt fencing, bog mats etc. specific to each location.

Further details on access routes maps for the overhead line development will be provided in future addendum(s) to tower work packages**.**

3.4 MAIN CONSTRUCTION WORKS

The following describes elements of the main construction works to be undertaken for the development including the Material storage yard, OHL route and Substation construction and civil works.

3.4.1 MATERIAL STORAGE YARD CONSTRUCTION ACTIVITIES

The construction material storage yard for the overhead line (OHL) elements of the development is proposed to be located in the townlands of Monaltyduff and Monaltybane, Carrickmacross, County Monaghan.

The yard will be constructed before the commencement of the overhead line works. This facility will serve as a central site for storing equipment and steel tower components needed for overhead line construction.

The storage yard, of approximately 1.4ha, is located immediately adjacent to the southern side of the N2 National Primary Road, with access thereto and therefrom via a local road (L4700). Layout Drawing provided in Appendix 2 of this document**.**

The temporary yard will include secure storage areas, staff parking, temporary offices and welfare facilities. No foul drainage is to be installed in the temporary yard.

The yard will be used to store construction materials, primarily the steel tower structures, and machinery associated with the construction of the proposed OHL.

Topsoil will be stripped from the site and replaced with hardcore material to protect underlying layers of soil. Topsoil is to be managed in accordance with the Resource & Waste Management Plan which accompanies this CEMP.

An impermeable surface shall be in place at a demarcated fuelling area to ensure that contaminants do not percolate to hydrogeological environment.

Section 8.6.1 of the EIS states the following: *The surface water drainage system at the construction material storage yard will consider the recommendations of the CIRIA C468 and utilises SuDs (sustainable urban drainage) devices where appropriate. Runoff from site will be limited to greenfield runoff rates. Runoff will pass through a silt trap, oil interceptor and settlement lagoon before being discharged to the surface water.*

The Ecological Clerk of Works (ECOW) to advise throughout the construction, operation and reinstatement of the storage yard that proposed environmental mitigation measures are implemented in accordance with prescribed mitigation measures in the EIS. Appendix 4 – Ref no: 6.13 relates to surface water management at the storage yard.

CEMP (Addendum 1) provides all relevant details on the construction and environmental management of the material storage yard.ba

3.4.2 OVERHEAD LINE CONSTRUCTION

The following sections detail the anticipated construction methodology for the overhead line construction works.

As set out in section **7.3.4 of the EIAR**, *"The construction of the OHL will be undertaken in five general stages".*

- Stage 1 – Preparatory Site Work including Enabling Works, Guarding & Services
- Stage 2 – Tower Foundations;
- Stage 3 – Tower Assembly and Erection and Preliminary Reinstatement;
- Stage 4 – Conductor / Insulator Installation; and
- Stage 5 – Final Reinstatement of Land.

3.4.2.1 Foundation Installation

The tower foundations are required to be constructed of four individual footings for each tower leg. The tower will be set out and pegged prior to foundation excavation.

Excavations are set out specifically for the type of tower and the type of foundation required for each specific site.

Waste topsoil, subsoil, rock and concrete will be generated at each site where foundation installations will take place. All such waste materials shall be handled in accordance with the Resource Waste Management Plan.

Foundation Type

It is proposed that the tower foundation will be constructed using piled or pad and chimney foundation. Both types of foundation construction types were assessed as part of the 2015 EIS, subsequent oral hearing and as part of ABP's decision to grant permission.

Foundation Size and Setting Out

Proposed foundation leg sizes were set out in section **7.3.4.2.3 of the EIS**. It was envisaged that the tower legs would be up to 8.8m x 8.8m in plan and 3.5m deep for an angle tower and up to 3.7m x 3.7m in plan and 2.5m deep an intermediate tower using a pad and chimney type foundation construction methodology.

Minimum to maximum plan sizes were shown in drawing numbers MT-007-01, MT-007-002 and MT-007-003 submitted with the 2015 application. Typical plan and cross-sectional drawings of piled tower legs are presented in **Figures 3.1 and 3.2** below.

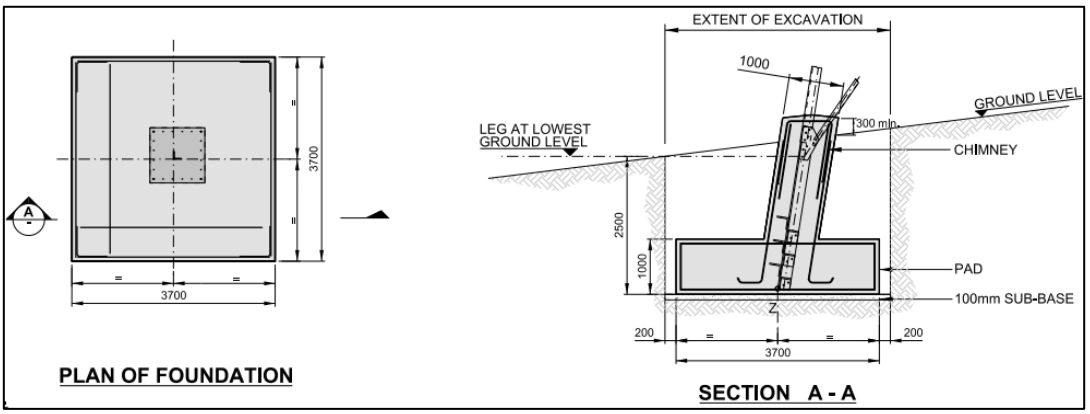

Figure 3.1: Typical Suspension Tower Leg: Pad & Chimney (dimensions subject to site specific design)

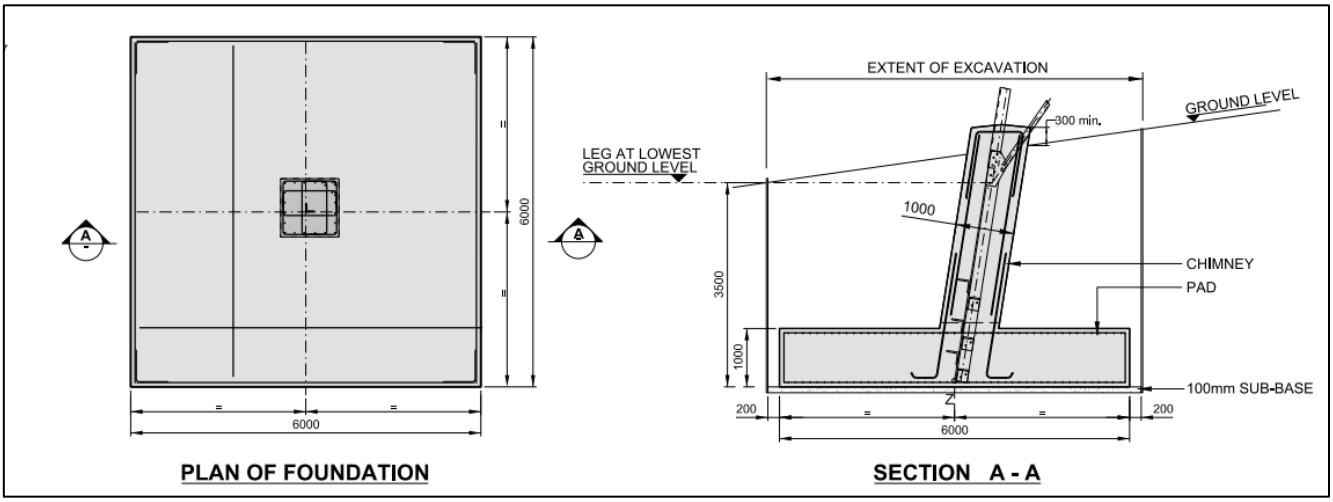

Figure 3.2: Typical Angle Tower Leg: Pad & Chimney (dimensions subject to site specific design)

Piled foundations generally have a smaller footprint due to the greater load bearing capacity provided by the deeper piles. Pile depth will typically be ca.10m, with slightly deeper piles in softer ground. In terms of footprint, pile foundation caps will be no larger than that proposed for pad and chimney and in the majority of cases will be substantially smaller. Excavation depths for pile caps are less than that required for pad and chimney foundations.

Typical plan and cross-sectional drawings of piled tower legs are presented in **Figures 3-3 and 3-4 below.**

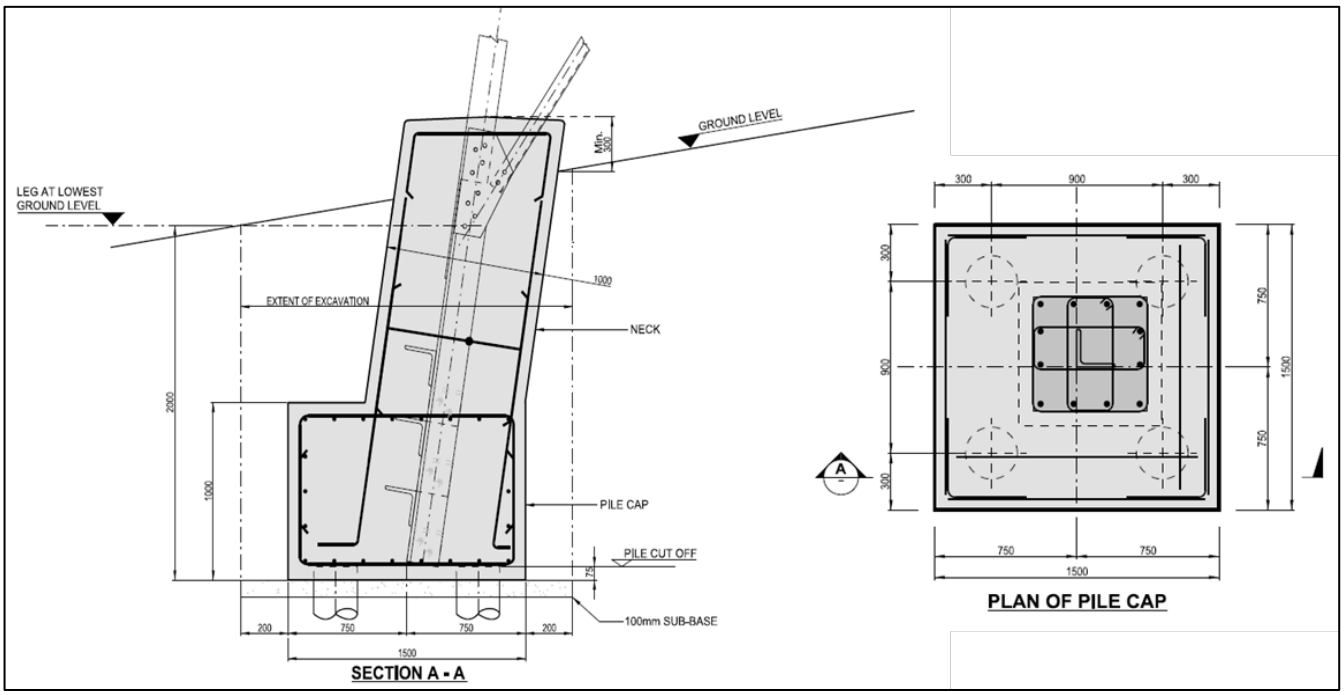

Figure 3.3: Typical Piled Intermediate Tower Leg: Foundation (dimensions subject to site specific design)

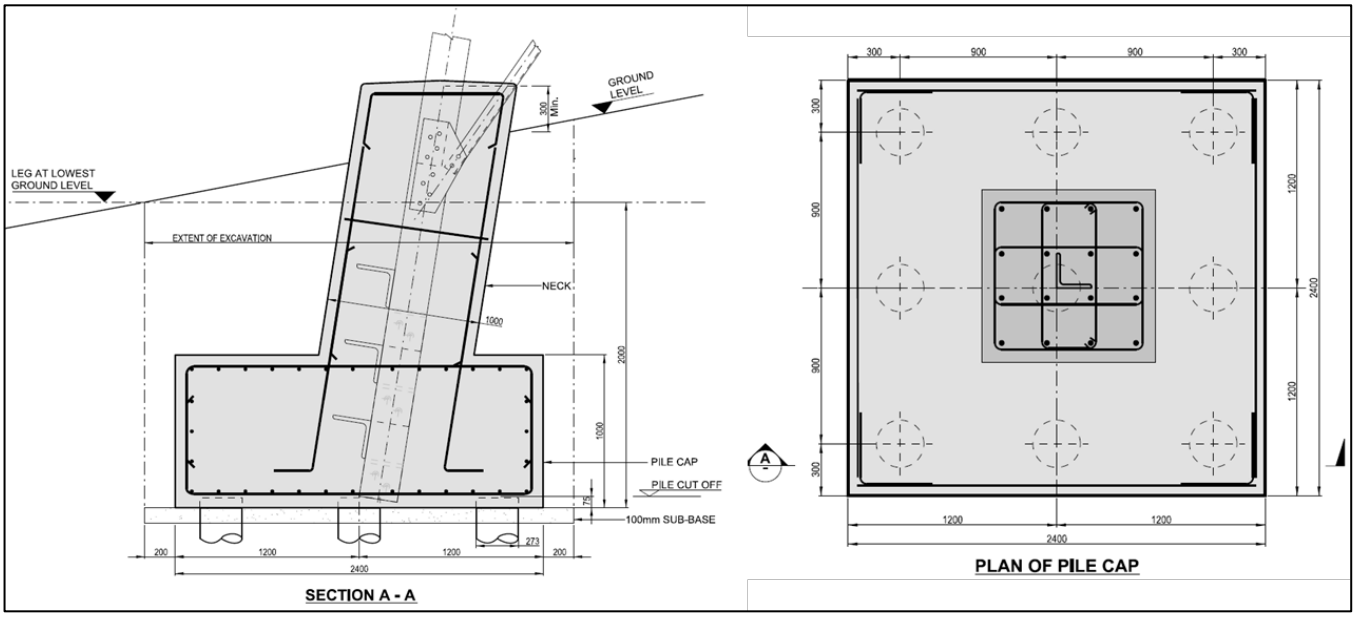

Figure 3.4: Typical Piled Angle Tower Leg: Foundation (dimensions subject to site specific design)

Piled Foundation Works

Piled foundations will typically require the drilling (ODEX) or auguring (CFA) of several holes at each leg of the tower. The holes are drilled and then reinforced with steel and concreted or grouted. The piles form a stable base upon which a concrete pile cap will be installed. Once the concrete is completed and fully cured it is ready to receive the tower body.

Piling works sequence as follows:

- Marking out of pile locations
- Topsoil stripping of footprint area
- Mark out of pile locations
- Driving individual sheet piles to required depth
- Excavation of soil from foundation
- Installation of foundation piles (see methodologies below)
- Setting of foot template & tower leg
- Pouring of concrete
- Removal of sheet piles once concrete is sufficiently cured

There are 2No. of pile installation methodologies that are most likely to be used for the piling of foundations for the development, ODEX (Overburden Drilling EXcentric) and CFA (Continuous Flight Augur) piling.

ODEX is a percussive drilling type solution and involves the drilling of soil and rock.

ODEX piles are formed by using a down-the-hole-hammer (DTTH) type drill bit which is drilled through overburden soil and pulls a steel casing behind it. The casing will stop at rock and will prevent any overlying soils collapsing into the bore. The DTTH is then continued into rock formation as an open hole. Typically, a single length of steel reinforcement is inserted into the pile, although in some cases, a more traditional reinforcement cage may be used should the design require. The bore is then filled with concrete. The steel casing can be removed or left in place. If a single reinforcement bar is used, a steel plate is typically fixed to the top of the bar to anchor it into the pile cap. The top of the pile and steel reinforcement is then cast into the pile cap.

CFA piling is only suitable for sites where deep soil deposits are present and shallow rock is not envisaged. It is generally not possible to use this method to pile in rock or through large boulders. It involves the drilling of the pile with a continuous auger until the required depth is reached. The continuous auger will support the pile bore during construction, so the risk of borehole collapse is low. Once the auger has reached the required depth, concrete is poured from the toe of the auger through a hollow stem and the auger is slowly retracted out of the ground. Once the auger is removed and the bore is filled with concrete, a steel reinforcement cage is inserted into the wet concrete and allowed cure. The top of the pile and steel reinforcement cage is then cast into the pile cap.

Once the concrete is cured, all piles will be tested for integrity and a selection tested for load capacity. The top and sides of the pile cap will be backfilled with excavated soil from the tower site. See **Figures 3.5 and 3.6** for visualisations of the difference in piling methodologies.

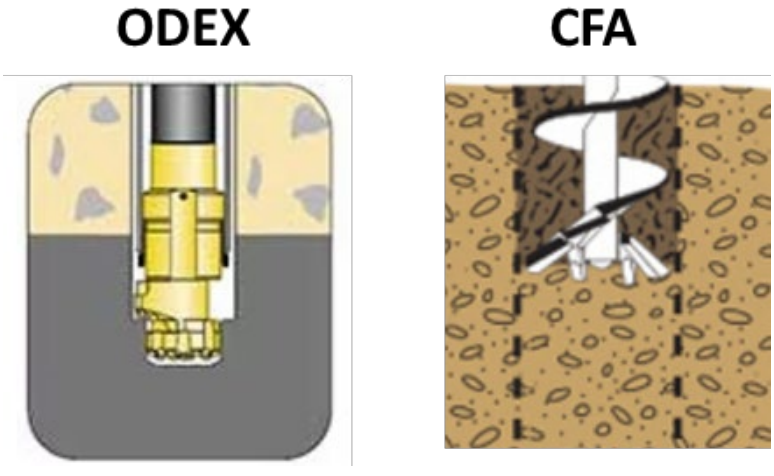

Figure 3.5: ODEX v CFA Piling

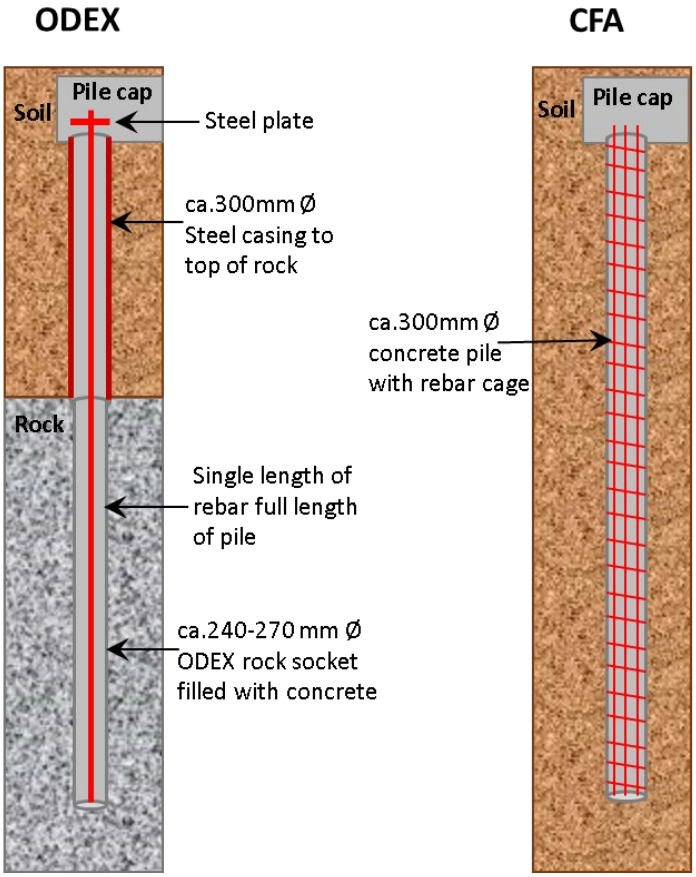

Figure 3.6: Typical ODEX v CFA Piling Make Up

Pad & Chimney Foundation Works

Given changes in health and safety practices since the EIS was prepared it will be necessary to use sheet piles supported by hydraulic frame(s) for installing the Concrete Pad & Chimney foundation. The purpose of the sheet piles is to prevent collapse of the sides and to prevent the excavation becoming too large.

When each leg is excavated to the formation levels (depths) and all water is pumped from the excavation, reinforcement is placed (if required) and concrete is poured into the foundation. Concrete trucks shall be brought as close as possible to the excavation to pour directly into the excavation.

After this concrete pour the remaining part of the foundation, the shear block or neck is shuttered. Once the shuttering is complete the concrete may be poured, and the foundation completed. The tower foundations are backfilled one leg at a time usually with the material already excavated. The backfill is placed and compacted in layers. Once the tower base is completed and fully cured it is ready to receive the tower body.

3.4.2.2 Tower Erection

Supporting steel structures are erected on concrete foundations as noted above. These structures are used to support the energised conductors and associated equipment. Individual members for each tower section are identified from a packing list and assembly drawings in the material storage yard and are stored in individual bundles as tower sections for each individual tower. Lattice steel towers can be erected in two ways:

- Mobile Crane
- Derrick/Gin Pole

A mobile crane is typically the method used to erect towers where access allows. Some tower locations may have ground conditions which necessitate construction works associated with preparing landing zones for such cranes i.e. construction of a temporary platform.

The towers can also be erected using a derrick / gin pole. This method is typically used where access is restricted.

3.4.2.3 Conductor, Shieldware and Fibre Optic Installation

Conductor and Shieldwire are placed on the transmission line support structures by a process called stringing. The first step to stringing would be to install insulators (if not already installed on the structures during ground assembly) and stringing wheels. Stringing wheels are pulleys that are temporarily attached to the lower portion of the insulators at each transmission line support structure to allow conductors (cables) to be pulled along the line.

Additionally, guarding structures would be erected where required prior to stringing any transmission lines. The guarding structures are typically vertical wood poles, connected with tensioned wire and are erected at crossing such as road crossings or crossings with other energised electric and communication lines to prevent contact during stringing activities.

Once the stringing wheels and guard structures are in place, the initial stringing operation would commence with the pulling of a lighter weight stringing rope through the wheels along the same path the transmission line would follow. The stringing rope is attached to the hard line, which follows the stringing rope as it is pulled through the wheels. The hard line would then be attached to the conductor, shield wire or optical ground wire (OPGW) to pull them through the wheels into their final location.

Pulling the lines may be accomplished by attaching them to a specialised stringing vehicle, known as a puller-tensioner. Following the initial stringing operation, pulling and tensioning the line would be required to achieve the correct sagging of the transmission lines between support structures. Finally, the tension and sag of conductors and wires would be finetuned, stringing wheels would be removed, and the conductors would be permanently attached to the insulators at the support structures. OPGW would be installed at the same time as the conductors on each of the

transmission line structures. Additional work is required on the OPGW where joints in the fibre optic cables are required to be spliced. This is typically carried out by a small crew operating a Mobile Elevated Work Platform (MEWP) or similar.

There are currently stringing locations specified for this development, which are shown in the figures in Section 3B of the planning application for the proposed development. The equipment required for pulling and tensioning activities would include tractors and trailers with spooled reels that hold the conductors and trucks with the tensioning equipment. Depending on topography, minor grading may be required at some sites to create level pads for equipment.

3.5 SUBSTATION WORKS

The following civil works are required in Woodland 400 kV Substation on the E10 Turleenan 400 kV line bay:

- Construct foundations for new overhead line gantry
- Construct numerous concrete plinths
- Install ducting
- Installation of 2 no. C2 chambers at the base of existing tower 410 and associated fibre ducting

3.6 LANDSCAPE PLAN

The following provides a brief summary of the landscaping approach at the Material Storage yard Appendix 2 depicts the landscaping proposals within the site and boundary areas. The following will be in place:

- A mix of native hedgerow species along the southwestern and southeastern boundaries.
- The removal of existing hedgerow to facilitate visibility along the southwestern boundary. This will be replaced with a mix of native nursery mix & whips behind site lines.
- Native woodland mix proposed along the northwestern boundary.
- Wet Grassland grass mix to newly formed swale along southeastern boundary.
- Berm formed adjacent to swale channel from linear swale excavation. Berm will be sealed and native grass seed mix applied along berm its length.

The purpose of the landscaping management is to support site screening and enhance biodiversity across the site

See Appendix 4, Mitigation Measures - Ref Nos: 9.1-9.5 which lists general landscaping approach for wider development

3.7 WORKING HOURS

Site development and building works will generally be carried out during normal working hours. In exceptional circumstances works may be required outside of these hours.

4 ENVIRONMENTAL MANAGEMENT

The predominant environmental impacts of potential concern in relation to the development include the avoidance of pollution of water, soil and air, the correct handling and disposal of wastes, control of noise, care and attention regarding the visual environment and wildlife, the avoidance of wastage of natural resources and the protection of biodiversity.

The appointed contractor shall be required at all times to ensure the proper management of all relevant environmental aspects and associated risks while executing the works.

Below is a summary of some of the main environmental elements to be considered throughout the development project.

Note the measures detailed below are general. A full suite of mitigation measures derived from the environmental planning documents (EIS & NIS) is provided in Appendix 4.

4.1 EARTHWORKS MANAGEMENT

Earthworks activities will be managed to minimise environmental impacts, preserve soil quality, and reduce the risk of pollution, erosion, and sedimentation.

The following details the approach to the handling and management of stripped and excavated materials throughout the development site(s):

- Topsoil will be stripped and stored in a dedicated stockpile location.
- Any stockpiles of waste soils created during the project must be correctly and appropriately managed. All stockpiles will be temporarily stored at each construction site prior to removal by a licensed haulier. These stockpiles must be segregated as per the Waste Classification with sufficient recording and signposting for each stockpile.
- Stockpiles will be graded to a <1:4 profile.
- Bunds or sediment fences may be installed around stockpiles to contain runoff and siltation prior to offsite disposal.
- Handling of soils will be minimised to reduce compaction and degradation.
- Soils will only be moved in suitable weather conditions, avoiding conditions that could lead to increased runoff.

Material Storage Yard

- Materials removed from the southeastern boundary to create a swale channel will be redirected to an adjacent berm. The settlement pond will be excavated to formation level

and materials also redirected to berm. This linear berm will be sealed and native grass seed mix applied (Appendix 2)

- Topsoil will be stripped to prepare hardstand areas for stone
- Topsoil will be segregated from other site materials
- Temporary stockpiles of topsoil will be created before offsite disposal to licenced facility and /or retained on site for reuse
- Topsoil will be reused during the reinstatement phase of project
- Temporary stockpiles will be located in designated area away from the drain present on the southeastern boundary.

4.2 REFUELLING & HYDROCARBON MANAGEMENT

The following sections detail approach to managing hydrocarbons and fuels throughout the development site(s).

4.2.1 REFUELLING

The material storage yard will have a demarcated area for refuelling, as can be seen in the layout drawing in Appendix 2. Any services of vehicles will be confined to this designated area. Any other raw materials or fuels will be stored within bunded areas at the yard.

At the tower locations or access routes along the overhead route, in the event that refuelling is required outside of designated areas, fuel will be transported in a mobile double skinned tank and a spill tray will be employed during refuelling operations.

At Woodland substation, the construction site will have a demarcated area for refuelling, where applicable.

Measures taken to avoid spillages of fuel or contaminants at the material storage yard, tower locations and the Woodland substation include:

- Use of secondary containment, e.g. bunds around oil storage tanks
- Use of drip trays around mobile plant
- Supervising all deliveries and refuelling activities and
- Designating and using specific impermeable refuelling areas isolated from surface water drains

4.2.2 HYDROCARBON MANAGEMENT

To minimise the potential risk of contamination from refuelling or general fuel management the following general controls are to be in place:

- To reduce the likelihood of leaks, all plant will be inspected prior to entry on site
- Spill-kits and hydrocarbon absorbent packs will be stored in the cabin of each vehicle and operators will be fully trained in the use of this equipment
- Plant observed to have oil leaks will be immediately removed from site
- Site induction will contain actions to be taken in the event of an oil leak and details of who to contact in the event of a spillage will be circulated
- Hydrocarbon based products along with paints, sealants etc. to be stored in a COSSH cabinet (Control of Hazardous Substances to Health)
- No refuelling will be allowed within 50 m of a stream / river
- No refuelling will be allowed within 20 m of a drainage ditch

See Appendix 4, Mitigation Measures - Ref Nos: 4.20, 5.4, 6.2 & 6.6.

4.3 WATER PROTECTION & MANAGEMENT

The layout drawing (see Appendix 2) informs the surface water management requirements for the material storage yard. Drainage channels will be constructed across the site as part of the enabling works and will be in operation prior to any equipment coming to site. An oil interceptor (or oil separator) will be installed underground in the middle of the site, in line with the drainage channel.

The oil interceptor is a measure that will detect any leakages of oil that may occur from the material storage yard. The oil interceptor is connected to an alarm system which is remotely monitored. Where no oil is detected from the unit, water will pass through and will be directed to the settlement pond located onsite.

At tower locations along the route and along access routes, water protection management will include silt traps, check dams or silt curtains where applicable (or a combination of measures). Detailed locations of where sediment control will be installed will be captured during ecology site visits prior to construction commencing at tower locations and added to each site and tower access drawing.

Surface water protection at Woodland substation will include silt traps, check dams or silt curtains also. The Woodland site is hydrologically connected to Tolka River which forms connectivity to South Dublin Bay and River Tolka Estuary SPA , so where applicable, water quality monitoring will be carried out.

Surface water management measures at all site locations will be installed prior to active works commencing. The effectiveness of these measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW.

The ECoW will identify any measures that may be required due to varying weather and on-site conditions. In the event of any issues identified, the ECoW will have the necessary authority to

instruct the contractor to stop related works in the area to allow the root cause to be identified and addressed before works can proceed.

Works in the vicinity of rivers and streams shall comply with the "*Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (2016)*"

In order to minimise erosion and silt mobilisation, the following will be applied:

- Removal of vegetated surfaces will be limited to the area of excavation
- Locally excavated material will be reinstated as soon as possible following the completion of construction works to allow recovery in-situ
- Temporary soil stockpiles, if any, will remain undisturbed until re-use and re-establishment along with proposed line route. Ensure stockpiles are sealed and located away from drainage channel/watercourse
- Any Water runoff will be captured by suitable interception drainage as advised by the ECoW in compliance with relevant mitigation measures
- All proximal watercourses to be protected with silt fence / silt barriers intercepting works area and watercourse

4.3.1 DEWATERING PROCEDURES

This section sets out how dewatering will take place during excavations for the settlement pond at the material storage yard as well as dewatering of excavations at tower locations and/or Woodland substation.

Where groundwater needs to be controlled to allow construction to proceed, the following dewatering procedures will be implemented.

The following sequential steps will be carried out during the dewatering of excavations for the settlement pond and drainage lines and initial site strip at the material storage yard.

1. **Clean Stone Sump**

    - All excavations will be monitored regularly for ingress of groundwater
    - In the event that groundwater ingress may impact the construction works within an excavation a “clean stone sump” will be installed
    - A clean stone sump is a temporary pit constructed below the required excavation depth and filled gravel serves to collect water within the excavation
    - Stone material installed in the sump to be coarse/aggregate and shall be clean with no adherent material/solids.
    - A perforated standpipe will be installed in the centre of the sump to allow the pump to draw the excess water

2. **Discharge pumps**
    - A pump will be installed within the standpipe to allow for pumping of water from the excavation.
3. **Proprietary Settlement Tank**
    - Water will be pumped via lay flat hose to the settlement tank inlet pipe
    - Suspended solids will be attenuated internally by a series of lamella blades / clarifiers
    - Solids will fall out of suspension into a base hopper
    - Treated water is discharged from the tank outlet
4. **Silt Bag Filtration**
    - Water will discharge from the outlet of the settlement tank to a silt bag
    - The silt bag comprises a geotextile, permeable fabric (Terrastop brand)
    - The silt bag will intercept and filter small solids and fines
    - Water will then extend across a vegetated buffer
5. **Vegetated Buffer**
    - Water will percolate across the vegetated buffer area as a final polishing step prior to natural flow to nearest field drain, where space allows.
6. **Field Drain**
    - Water will flow from the buffer to an adjacent field drain
    - Mitigation measures (silt fences/timber weirs/clean stone check dams) shall be installed in the field drain to capture any residual material prior to discharging downstream

Figure 4.1 depicts a typical dewatering arrangement to be put in place during excavation of settlement pond at the material storage yard

Figure 4.2 provides examples of typical surface water mitigation features to be installed during construction

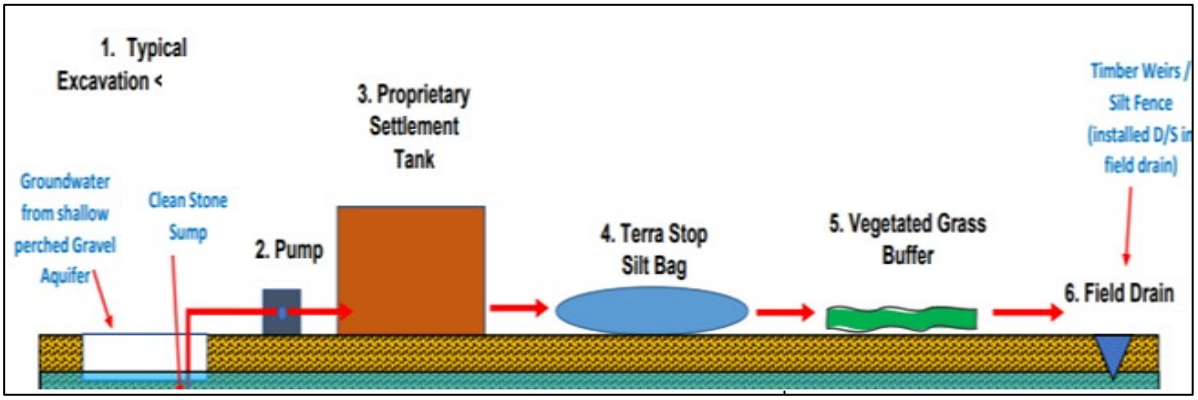

Figure 4.1: Dewatering Arrangement- Settlement Pond Construction

Figure 4.2: Typical Surface Water Management Measures

4.3.2 SURFACE WATER QUALITY MONITORING

Baseline Water quality monitoring will be undertaken by the ECoW prior to the commencement of construction to confirm baseline data.

Monitoring will continue throughout the construction phase of the development with baseline data informing subsequent monitoring and providing a measure to ensure there is no deterioration in water quality.

Overhead line Route

Condition 3 (e) of the planning conditions state '*details of the locations for water quality monitoring and the proposed water quality monitoring protocols in respect of surface water bodies'.*

Water quality monitoring will be targeted on watercourses considered to be at a higher risk of pollution (i.e. towers where there are watercourses within 20m of the construction works). These locations will be identified following further consultation with the ECoW and local IFI personnel. The finalised monitoring regime will then be reviewed by ESB Environmental Specialists and agreed to be applied throughout the development.

Daily visual inspections will be undertaken and will include checking for siltation, discolouration, slicks, visable oils and grease etc. Detailed records of observations including photographs will be made. If pollution is suspected, samples will be collected upstream and downstream of this point and sent to an appropriately accredited laboratory for analysis.

Material Storage Yard

As stated in **Section 2.3.2,** there is no sensitive aquatic receptor on site. However there is a dry, drainage ditch to the east of the site and this provides a weak connectivity to the River Proules and Monalty Lough pNHA , located over 1km north.

Visual inspections will be carried out on the adjacent drainage channel checking siltation, discolouration, slicks, visible oils and grease etc.

Woodland Substation

The Woodland 400kV Substation is drained by several catchment channels of the Woodland Stream, a sub- tributary of the Tolka river - **See Section 2.3.1.**

Visual inspections will be carried out on the adjacent drainage channel checking siltation, discolouration, slicks, visable oils and grease etc.

See Appendix 4, Mitigation Measures - Ref Nos: 6.5-6.14

4.3.3 GROUNDWATER QUALITY MONITORING

Condition 3 (f) of the planning permission states, '*details of monitoring of water levels and water quality in wells within 100 metres of the proposed alignment'.*

The EIS (Chapter 7 Volume 3C & D) state that most tower sites are located far from residential properties, so groundwater removal (dewatering) is unlikely to affect existing wells and boreholes.

As a precautionary measure, and in accordance with Condition 3(f) of the planning permission, any wells identified within 100 metres of the overhead line (OHL) will be noted. If dewatering is anticipated in these areas, groundwater levels and water quality will be monitored. Monitoring will only be carried out where dewatering actually takes place. Dewatering procedures will be applied as per Section 4.3.2 above.

Mitigation measures relating to dewatering excavations and well monitoring are included in **Appendix 4** (**Nos:5.6 and 5.7**)

4.4 CONCRETE WORKS MANAGEMENT

The material storage yard will include a dedicated concrete washout area for any cement-related works required during the enabling phase. Only concrete chutes will be rinsed within this area. As concrete use is not anticipated during standard yard operations, the washout area will be removed when not in use.

At tower locations, lined skips will be provided to contain cementitious wash water from chute cleaning activities.

The following measures will be applied for all concrete works:

- The contractor will be required to make provisions for the removal of any concrete wash waters by means of tankering off-site
- No concrete batching will be required at any structure, the material storage yard or Woodland substation
- All concrete will be brought on site by truck
- Wet concrete operations adjacent to watercourses will be avoided
- Wash down and washout of concrete transporting vehicles will not be permitted at the construction locations. Such wash down and washout activities will take place at an appropriate facility offsite.

See Appendix 4, Mitigation Measures - Ref Nos: 4.17 , 4.18 & 13.3 – point(s) 4 & 5.

4.5 TRAFFIC MANAGEMENT

An accompanying Traffic Management Plan (TMP), along with TMP Addendum No. 1 (addressing the Material Storage Yard), forms part of this submission and demonstrates compliance with Condition 3, together with the CEMP and RWMP.

Condition 3 (c) states: '*site specific arrangements for each temporary access route, to include, where necessary:*

i. arrangements for stepping down vehicle size,

ii. arrangements for off-loading of materials,

iii. short term road closures,

iv. the phasing of construction works which are accessed by single lane carriageways, and

v. the arrangements for the transfer and management of concrete, including wash out facilities'

The TMP Addendums will detail the above items for each work package. TMP Addendum for the material storage yard addresses each item. Subsequent Addendums will in turn address all items for the overhead line tower construction and Woodland substation.

All Addendums will be issued to the relevant Local Authorities for agreement prior to the commencement of any works at these locations.

The Traffic Management Plan details the access and exit strategies for various components of the North-South 400 kV Interconnection Development. It breaks this down into three specific areas:

Material Storage Yard

This yard near Carrickmacross serves as a major logistics hub. Access is carefully managed to control higher traffic volumes. This yard is located to the west of the N2 and is accessed by the L4700. The existing access into the storage yard is located adjacent to a junction on the public road network and has restricted visibility. It is proposed to construct a new entrance onto the L4700 further south of the existing entrance.

Overhead line Route

Traffic management along the OHL route will ensure strategic use of existing national roads for efficient movement of construction vehicles. Safety at entry and exit points is emphasised through clear signage and road protocols. The access routes will also utilise lower-capacity routes – regional and local roads in a way that minimises disruption. Entry points are selected based on proximity to tower sites and material delivery needs, aiming for operational efficiency with minimal community impact.

Woodland Substation

The existing entrance to the Woodland 400kV substation is situated at the end of an existing private entrance road, which itself extends from the public road. Visibility at the entrance to the substation is not an issue as the there is no requirement for turning left or right to access the public road network.

The TMP and TMP Addendum No. 1 (for the material storage yard) outlines key details of the construction traffic plan to ensure safe, controlled, and efficient movement of vehicles and personnel to and from site locations:

Types of construction traffic

Construction-related vehicle movement will consist of:

- **Light Vehicles:** Cars and vans transporting construction staff commuting to site.
- **Heavy Goods Vehicles (HGVs):** Delivering plant and machinery, construction materials such as concrete, stone, ducting and drainage components, wooden poles, steel structures, cabling, fencing, and electrical equipment.

Site traffic control measures

- All vehicle movements within the site will be strictly monitored and controlled.
- Parking on public roads is strictly prohibited.
- Construction traffic and personnel must use pre-designated access routes and zones at all times to minimise interaction with the public.
- Traffic control measures will be implemented at all site locations once access agreements are finalized.
- Entry and exit points may involve movement between public roads and private property access lanes, requiring clear coordination

Risk management and safety

- Prior to works commencing, the appointed contractor will assess site-specific risks related to traffic access and egress and incorporate appropriate mitigations.
- Road signage, compliant with Chapter 8 of the Department of Transport's Traffic Signs Manual, will be installed as needed.
- Pedestrian access will be clearly defined and physically separated from vehicular routes to enhance safety.

See Appendix 4, Mitigation Measures - Ref No: 11.1

4.6 AIR QUALITY & DUST MANAGEMENT

In periods of extended dry weather, dust suppression may be necessary at the material storage yard, along overhead line routes and at Woodland substation to minimise the nuisance risk. Dust suppression control measures to be implemented are listed below:

- A water bowser will be used to dampen down the internal access tracks and temporary work(s) areas to prevent the generation of dust (**Figure 4.3**)
- In the event of dust nuisance occurring within or outside the site boundary, movements of materials likely to raise dust would be curtailed and satisfactory procedures implemented by the appointed contractor to rectify the problem before the resumption of construction operations
- All roads and access routes will be inspected frequently by the site management
- If required, a road sweeper and water bowser will be deployed to clean and spray the local roads with water during dry periods when there is a risk of dust nuisance (**Figure 4.3**)

See Appendix 4, Mitigation Measures - Ref No: 8.1.

Figure 4.3: Dust suppression methods using road sweeper and water bowser

4.7 NOISE & VIBRATION

4.7.1 NOISE

Typical construction activities at the material storage yard will comprise site clearance, topsoil stripping, excavation works, access route preparation and construction vehicles coming to and

from site. Mitigation measures for noise will include a noise barrier – affixed onto palisade fencing or constructed alongside the palisade fence on the south, east and west boundaries of the site. An example of a typical noise barrier used at construction sites is presented in **Figure 4.4.**

At tower locations, site clearance, concrete pouring, tower erection, vehicle movement and the use of specialist equipment for the stringing of the conductor will be prominent. Similar civil works, installation of hardstand areas and electrical works at Woodland substation.

The use of mechanical tools, general construction activities, and the movement of vehicles servicing the sites listed above has the potential to generate noise and vibration during the construction works. No significant impacts are anticipated during construction activities.

The following general mitigation measures are considered appropriate for the permitted development during the construction phase:

- Plant will be used in an appropriate manner with respect to minimising noise emissions
- All plant used will be modern, well maintained and working properly
- Low noise emitting plant will be selected where appropriate
- Avoid idling engines. Engines will be switched off when not in use
- Erection of noise barriers proposed along select areas to suppress noise limits during active construction (on the south, east and west boundaries of the site of the material storage yard) (**Figure 4.4**)
- Reduced speed limits will be imposed along local access roads and within the construction site. Speed limits along access roads are set to 25km per hour and 15km per hour along internal site access routes.

See Appendix 4, Mitigation Measures - Ref Nos: 7.1, 7.2, 7.3 & 7.5

Figure 4.4: Wooden Noise Barrier – Example Photos

4.7.2 VIBRATION

Access to the OHL structure sites and site compound(s) utilises existing farm access roads and the effect of vibration works will be negligible at this and at all construction locations.

4.8 ECOLOGY MANAGEMENT

The measures to maintain ecological biodiversity with regard to natural occurring habitat on site are as follows:

- An ECoW will be employed during the construction phase of the development. Duties will include the review of all method statements; delivery of toolbox talks and monitoring of construction phase to ensure that all environmental controls and mitigation measures are implemented
- Spraying of vegetation using pesticides will be strictly prohibited
- Habitat disturbance e.g. vegetation rutting, will be limited by controlling the movement of maintenance vehicles. Construction vehicles will not encroach onto habitats beyond the permitted footprint
- Pre Construction confirmatory surveys will be carried out within previously surveyed areas
- Pre-Construction walkover of access routes to determine ground conditions and the potential requirement for additional mitigation e.g. silt traps, bog mats, temporary culvert etc. See Appendix 3
- In the event that protected mammal/amphibian species, or their active habitats are found during the construction phase, works will cease immediately and the area will be cordoned off until advice is sought from the ECoW
- Surface water management measures will be advised and effectiveness managed by ECoW

4.8.1 INVASIVE SPECIES SURVEYS

To ensure the site remains free of invasive species, ecological site walkovers will include inspection of development site(s) and surrounding environs for invasive species with emphasis on more high impact non-native species included in the *Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011)*

Some mitigation and preventative measures for the control of invasive species include:

- All equipment and vehicles will be visually inspected for evidence of attached plant material, mud and debris. This will be undertaken before entering and leaving the site. Any attached or adherent material will be removed before leaving the site

- Any invasive species found to occur within 15m of working areas will require its eradication to avoid the spread of invasive species
- Materials containing these species will be quarantined and disposed of to a fully permitted facility and transported by a licenced contractor. Records of findings will be kept, this will include species identity, location and source.

See **Appendix 4 Mitigation Table – Ref no: 4.6**

4.8.2 MAMMAL SURVEYS

4.8.2.1 Otter (*Lutra lutra*)

Otter surveys will be carried out having regard to guidance of NRA (2009). Pre-Confirmatory surveys will be undertaken by the ECoW along previously surveyed areas detailed in **Table 2.4** to confirm presence/absence.

The results of pre-construction confirmatory surveys may inform the refinement of mitigation measures (if required) in Contractor method statements. See **Appendix 4 Mitigation Table – Ref no: 4.25 & 13.2.**

4.8.2.2 Badger (*Meles meles*)

Badger surveys will be carried out having regard to guidance of NRA (2009). Pre-Confirmatory surveys will be undertaken by the appointed ECoW along previously surveyed areas detailed in **Table 2.4** to confirm presence/absence.

A buffer zone will be established around any known Badger setts through the erection of temporary posts and wires with signage erected. No works shall take place within 50 m of an identified sett. Should works be required to encroach the 50 m buffer zone, NPWS to be consulted.

The results of pre-construction confirmatory surveys may inform the refinement of mitigation measures (if required) in Contractor method statements.

See Appendix 4 Mitigation Table – Ref no: 4.27.

4.8.3 AVIAN SURVEYS

4.8.3.1 Kingfisher (*Alcedinidae spp*)

Confirmatory pre-construction surveys will be undertaken at watercourses linked to the River Boyne and River Blackwater, where tree felling may lead to potential disturbance to Kingfisher breeding sites.

Riparian areas at the following locations were identified as potential breeding sites for Kingfisher where disturbance of breeding sites associated with tree topping/trimming may occur. These areas include:

- Boycetown River between Towers 376 and 377;
- Stream between Towers 358 and 359;
- Stream between Towers 350 and 351;
- Clady River, three crossings between Towers 344 and 347;
- Small stream between Towers 313 and 314;
- Small stream between Towers 317 and 318; and
- Kilmainham River between Towers 251 and 252.

See Appendix 4 Mitigation Table – Ref no: 4.26 & 13.1.

4.8.3.2 Whooper Swan (*Cygnus cygnus*)

Prior to the construction of the towers and installation of the conductor, a specialist ornithologist, in consultation with NPWS, will be engaged to advise on a robust monitoring programme to be implemented for Whooper Swans to assess the effectiveness of line marking and to ensure the protection of Whooper swans during the operational phase.

A suitable monitoring programme will be devised to be agreed with the relevant planning authority.

All locations where flightlines have been previously identified will be re-surveyed pre-construction of overhead line towers.

Table 4.7 of the NIS details results of flight lines observed across the overhead line route. These are located in the following areas:

- Ballintra/Tonyscallon/Toome or Crinkill Lough;
- West of Lough Egish/ eastern Lough Morne and
- Raferagh Pond/Mill Lough/Comeragh Lough.

Where flightlines were identified, they will be surveyed during the pre-construction of overhead line towers and also during construction and operation phases (up to 5 years).

Confirmatory surveys will be conducted at all sites identified, monthly between October and April when Whooper Swans are present in the area. Throughout the lifetime of the proposed monitoring works, additional areas where flightlines or collisions are recorded will be added to the list of areas to be surveyed.

The monitoring methodology and regime will be clearly defined with details and included in the live CEMP and respective future Addendums for the overhead line route. This will comply with Planning Condition 6 - **Table 2.1**.

See **Appendix 4 Mitigation Table – Ref no. 13.4 – 13.9. Ref 13.9** specifically details areas and lengths of alignment proposed for marking with flight diverters

4.9 WASTE MANAGEMENT

A Resource and Waste Management Plan (RWMP) & RWMP Addendum No. 1 forms part of the compliance with Condition 3 of the permitted planning permission and accompanies this document.

Note, Condition 3 (b) states '*measures to demonstrate compliance with the relevant regional waste management plans*. Since the planning conditions for this development were granted in 2016, the regional waste management plans have since been superseded by the National Waste Management Plan for a Circular Economy (2024 – 2030). Details of the measures to demonstrate compliance with these are in the accompanying RWMP.

The material storage yard, as previously mentioned, will be used to store steel and equipment required for the construction of the overhead line. It will also include staff facilities and meeting rooms for use during the works. In this context, the term 'material' refers specifically to steel and equipment necessary for the overhead line construction and does not include soil, waste, or any other by-products.

Waste topsoil, subsoil, rock and concrete will be generated at each site where foundation installations will take place at tower sites across the overhead line route. All such waste materials shall be handled in accordance with the Resource Waste Management Plan. Soil excavated during foundation works will be temporarily stockpiled onsite if sufficient space is available and subsequently reinstated around the base of the tower once construction is complete. In instances where space is limited, the soil will be removed from the site by a licensed waste haulier and transported to a licensed facility.

Construction waste at Woodland substation will be stored at a designated area onsite and removed by licensed waste hauliers.

The key waste management proposals for the sites listed above include:

- The provision of a Waste Storage Area on site that will hold waste skips or other waste receptacles. Individually labelled skips will be provided for each category of waste, which will be emptied regularly.
- All development waste will be recorded in the Resource and Waste Management Plan and associated RWMP addendums. This document will be made available for all personnel and will be located in the site compound office.
- All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. Should it be determined that any of the soil excavated is

contaminated, this will be dealt with appropriately as per all applicable legislative requirements.

- Waste management on site will be carried out in accordance with the 2021 EPA Guidance '*Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects*'. Regulations in relation to waste management will be adhered to, as outlined in the RWMP.

See Appendix 4 Mitigation Table – Ref Nos: 1.7, 4.6 &10.3.

4.10 ENVIRONMENTAL EMERGENCY RESPONSE

The appointed contractor will follow an Emergency Response Plan detailed below, which is appropriate to the risk posed by the works.

The Emergency Response Plan shall identity all potential emergency situations that could arise in relation to the works (e.g., major pollution incident, fish kill, peat slip, fire, gas leak, flood, traffic accidents etc) including any consequential effects or impacts.

The appointed contractor shall have pollution control equipment that is appropriate to the site and works covered by the contract and the risks that they pose.

4.10.1 ENVIRONMENTAL INCIDENTS & DEFINITIONS

4.10.1.1 Major Environmental Incident

Any situation which has resulted in significant pollution requiring high level of resources both inside and outside of site for response and remedy and must therefore be reported to Site/Company Management, the Client and/or any relevant statutory authority.

- Any spillage which cannot be rapidly contained and controlled, these include hydrocarbons such as diesel, oil spills etc
- Runoff of sediment-laden or otherwise polluted water to a watercourse
- Spills of fuel, oil or hazardous substances into water or a watercourse
- Inappropriate disposal of waste
- Concrete waste/washings disposed in a non-designated area – Major spill
- Uncovering of contaminated land

4.10.1.2 Minor Environmental Incident

Any situation which has resulted in environmental pollution which requires minimal action to aide recovery from Site/Company Management. Non-reportable to any relevant statutory authority.

- Spillage of hazardous materials (as defined by the Waste Management Acts) contained within the works area
- Concrete waste/washings disposed in a non-designated area – Minor spill
- Housekeeping issues/mismanagement of waste storage are

4.10.1.3 Near Miss

An event that could have resulted in an environmental incident but did not, either by chance or through timely intervention. Examples below:

- A sealed chemical container falls from storage but is not damaged
- A generator is left on the ground near a waterway with no drip tray
- A scheduled delivery is about to access a sensitive habitat but is stopped.

4.10.2 EMERGENCY RESPONSE PROCEDURE(S)

The following outlines some of the information, on the types of emergencies, which must be communicated to site staff:

- Release of hazardous substance – Fuel and oil spill
- Flood event – extreme rainfall event
- Environmental buffers and exclusion zones breach e.g., ecological exclusion zone
- Housekeeping issues or mismanagement of waste storage area
- Potential impact to archaeological or ecological features

If any of the above situations occur; the particulars of the Emergency Response Plan are activated, the following process will be undertaken:

- Stop all works in the area and evacuate if necessary
- Secure and contain the incident where it is safe to do so – this may include the use of spill kits, contacting authorities etc.
- Notify the Site Manager and/or Environmental Manager
- Record the incident.
- Investigate the root cause of the incident

The Site Manager and Environmental Manager will be responsible for overseeing the Emergency Response Plan and will be prepared and ready to implement the plan at all times. The following to be recorded:

- Nature of the situation – brief description of incident;
- Location of the incident;
- Time and date;
- Scale of the incident;
- Whether any spill has been released;
- Whether the situation is under control;
- Remediation measures undertaken;
- Name of the personnel who reported the incident; and
- Any other relevant details.
- Ensure ESB are notified regarding a minor incident within 24 hours.

The Environmental Officer will keep a log of all environmental incidents on file, and these will be made available to the Local Authority, ESB Environmental manager and other agencies, as required.

5 IMPLEMENTATION OF THE CEMP

5.1 ENVIRONMENTAL ROLES & RESPONSIBILITIES

This section outlines the responsibilities for the key project team to ensure the development of an effective CEMP through the lifecycle of the development.

5.1.1 CLIENT RESPONSIBILITIES

5.1.1.1 EIRGRID

Eirgrid will ultimately be responsible for the operation of the transmission asset and are responsible for the following during construction:

- Appointment of Agricultural Liaison Officers (ALO) and
- Appointment of Community Liaison Officers (CLO)

5.1.1.2 ESB Networks

ESBN will ultimately be the transmission asset owner and are responsible for the following during construction:

- Acting as the Client and maintaining oversight on environmental management of construction works
- Liaison with other stakeholders regarding proposed environmental management of construction works
- Discharge the conditions of planning permission, including preparation of any details to be submitted to, and agreed with the planning authorities prior to commencement of development.
- Appointment of a Contractor to undertake the construction of the development
- Appointment of a suitably qualified ECoW to ensure that all environmental and ecological mitigation measures detailed in the Contractor's CEMP and any associated Method Statements, are implemented in full, as well as on-site monitoring and reporting.
- Appointment of a project archaeologist to oversee the archaeological elements of the proposed works.
- Notify the Contractor immediately in writing of any identified non-conformance in the Contractor's approach to environmental management.
- Conduct regular audits of the Contractor's environmental management processes

- Act as the technical and environmental lead on the overall development
- Provision of an Ecological Clerk of Works
- Submission of monitoring reports to the relevant planning authority and other relevant statutory bodies in accordance with the requirements of the relevant planning authority.

5.1.1.3 Ecological Clerk of Works (ECoW)

The ECOW is responsible for the following:

- Work method statements associated with impacts to flora and fauna, will be developed by construction and site contractors, agreed with statutory authorities and ECoW (where appropriate), and implemented by construction crews for all construction activities.
- Pre-Construction Confirmatory Surveys & consultation with environmental specialists, where necessary
- Assisting the project team with the review and production of method statements and risk assessments where there is a risk of environmental impact;
- Supervision of construction works and ensure compliance with legislation and proposed environmental mitigation measures
- Monitoring habitats and species during the course of construction works and effectiveness of mitigation
- Provision of advice regarding the avoidance and minimisation of potential disturbance to wildlife
- Liaise with appointed Contractor regarding production of Contractor CEMP
- Provide recommendations on appropriate responses / actions to site specific issues (e.g. identification of previously unrecorded breeding sites during construction works)
- Liaising with Site Management and personnel as required.;
- Liaise with National Parks and Wildlife Services (NPWS), Inland Fisheries Ireland (IFI), Meath County Council (MECC), Cavan County Council (CCC) and Monaghan County Council (MOCC) for the duration of the development
- Liaise with Environmental Officer in the implantation of mitigation measures across the site
- Monitor the effectiveness of mitigation measures
- To ensure compliance with mitigation measures and/or to halt construction works if they deem a pollution event is likely.

5.1.1.4 Project Archaeologist

An Archaeologist will be responsible for:

- Applying for a Licences in accordance with the National Monuments Act 1930 (as amended) (if required);
- Ensuring implementation of archaeological mitigation measures;
- Liaising with the ECoW / Contractor Site Manager / Resident Engineer;
- Liaising with the Project Manager / ESB
- Participating in relevant toolbox talks
- Supervising all topsoil stripping works onto the surface of the underlying geological-derived subsoils.
- Ensuring that, in the event that subsurface remains of archaeological interest/potential are uncovered during earthworks, then works in the immediate area will cease, pending investigations by the appointed archaeologist and consultation with the National Monuments Service, Department of Housing, Local Government and Heritage (as required); and
- Producing a report describing the results of the programme of Archaeological Monitoring and any other archaeological interventions that might be required.

5.1.2 CONTRACTOR RESPONSIBILITY

The contractor is responsible for appointing an appropriate Project team for the duration of the construction project and ensure that they have the resources to ensure compliance with the measures set out in Appendix 4 and undertake the responsibilities set out below.

The general key personnel on site implementing the CEMP are listed below with roles and responsibilities detailed in the following sections:

1 Project Manager
2 Site Manager
3 Environmental Officer / Environmental Manager

5.1.2.1 Project Manager

The Project Manager is appointed by the contractor to manage and oversee the entire project. The Project Manager is responsible for:

- Implementing and updating the Construction and Environmental Management Plan (CEMP);
- Liaison with the client/developer;
- Liaison with the project team;

- Management of the construction project in accordance with the NIS, EIS, Planning Conditions and CEMP;
- Assigning duties and responsibilities in relation to the CEMP;
- Production of construction schedule;
- Materials procurement; &
- Maintaining a site project diary

5.1.2.2 Site Manager

The Site Manager manages all the works to construct the development, on behalf of the contractor. The Site Manager reports to the Project Manager. In relation to the environmental management, the Site Manager is responsible for:

- Ensuring all operatives/personnel are inducted prior to commencing works on site. The induction process will include requirements of CEMP;
- Ensure all works are carried out by operatives with relevant competency;
- Ensure all risk assessment / method statements cover requirements of CEMP where applicable;
- Supervise and monitor works to ensure compliance with CEMP;
- Ensure the correct management of all waste / retired materials from work sites and its appropriate segregation as required, to facilitate subsequent compliant collection / disposal.
- Ensure all monitoring is carried out as specified in CEMP;
- Liaising with the ECoW in preparing site-specific method statements for all works activities where there is a risk of environmental impact, by incorporating relevant mitigation measures; and
- Maintaining records of all site inspections.

5.1.2.3 Environmental Officer / Environmental Manager

The Environmental Officer or Manager shall have the following responsibilities:

- Liaising with the project team in assigning duties and responsibilities in relation to the CEMP to the project team;
- Responsibility for all aspects of waste management during the construction and for the implementation of the R&WMP;
- Completion of documented environmental audits to ensure that work is being carried out in accordance with environmental mitigation measures and method statements, etc.;
- Ensuring that the findings of all audits and inspections are addressed in a timely manner;

- Liaising with the Site Manager to ensure that the control measures set out in the Schedule of Environmental Mitigation are implemented;
- Liaising with the client, Ecological Clerk of Works, specialist consultant etc. in relation to environmental issues;
- Reviewing the management of waste on site;
- Ensuring that site inductions and toolbox talks contain the relevant environmental information and reviewing the effectiveness of the induction process to ensure that site staff have received suitable awareness training;
- Liaise with ECoW in the implantation of mitigation measures across the site; and
- Monitor the effectiveness of mitigation measures.

5.1.2.4 Specialist Sub-Contractors

Environmental consultants for waste classification, contamination risk assessment, and environmental monitoring of surface waters and sensitive receptors may be required at various points during the course of the development.

These specialist sub-contractors shall be responsible for liaising with the various stakeholders as listed above regarding the environmental management of construction works and complying with the various requirements of these stakeholders.

5.1.3 SITE CONTACTS

Table 5.1 to provide titles of contractor personnel forming part of the project team upon appointment. ESB contact(s) will be updated when project team is finalised.

Table 5.1: Main Contractor Contacts

Position Title:	Name:	Phone:	Email:
Main Contractor	*TBC*	TBC	TBC
Project Manager	*TBC*	TBC	TBC
Site Manager	*TBC*	TBC	TBC
Environmental Officer/Environmental Manager	*TBC*	TBC	TBC
Specialist Sub-Contractor(s)	*TBC*	TBC	TBC

Table 5.2: ESB Contacts

Position:	Name:
ESB Project Manager	Damien Sweeney

Position:	Name:
ESB Resident Engineer	TBC
ESB Ecological Clerk of Works	TBC
Project Archaeologist	TBC

6 SCHEDULE OF COMMITMENTS

The CEMP provides a framework for compliance auditing and inspection to ensure that these construction practices and mitigation measures as well as the conditions in the planning approval are adhered to.

Environmental mitigation has been set out in the application documentation, in the Natura Impact Statement (NIS) and Environmental Impact Statement (EIS) and are to be complied with during the course of the development by the appointed contractor.

Appendix 4 lists all mitigation measures from both the EIS and NIS documents.

6.1 MITIGATION MEASURES

6.1.1 DESIGN STAGE MITIGATION MEASURES (AVOIDANCE)

Structure locations have been identified to avoid impact on European sites. The following mitigation measures or criteria were included at the design stage of the OHL development, as detailed in section 6 of NIS.

- No tower bases or other support elements of the development will be located within the boundary of the European sites (although conductors will over sail the sites). Tower bases and all associated construction activity will be located at least 50m from the river boundary within the European Site and will be located outside the actual SAC boundary. Riparian semi-natural habitat will be retained undisturbed.
- Avoidance of updating structures within European Sites unless determined necessary
- No in-stream or bankside works will be required within the European site or their tributaries
- Machinery access for re-stringing activities will avoid sensitive habitats of European Sites
- Access routes will avoid areas of qualifying interest habitat
- No vegetation clearance will take place within European sites over sailed by the proposed development (River Boyne and River Blackwater SAC / SPA).
- The transmission line oversailing locations are selected at a relatively narrow section of the European sites at each of the two river crossings.

6.1.2 EIS MITIGATION MEASURES

A general mitigation measure is to employ an Ecological Clerk of Works (ECoW) on site who will monitor all construction activities in the vicinity of the development area and will monitor and ensure the implementation and effectiveness of the proposed mitigation measures.

All site works and activities, including use of temporary access routes, excavation of tower foundations, construction of towers and stringing will be conducted in an environmentally responsible manner, to minimise or, insofar as is practicable, eliminate any adverse impacts on water quality that may potentially occur as a result of works associated with the construction phase.

The mitigation measures contained in the EIS are listed in **Appendix 4, Items 1.1 – 12.6.**

6.1.3 NIS MITIGATION MEASURES

The mitigation measures contained in the NIS are listed in the mitigation table in **Appendix 4, Items 13.1 – 13.9.**

The main potential impacts identified during the construction phase of the development are localised effects to water quality which has potential to adversely affect protected aquatic fauna and terrestrial fauna breeding sites for Otter and Kingfisher.

All tributaries (as detailed in the NIS) will be monitored in the vicinity of the crossings in particular to ensure there is no disturbance to protected fauna (Kingfisher and otter breeding sites) and that reduction in water quality, which has potential to adversely affect salmon spawning sites, is also avoided. In the unlikely event of mitigation measures underperforming or failing, emergency measures will be implemented to prevent impacts to designated sites / features (e.g. spill kits, bunding) and all works will cease. This will be coordinated by the ECoW. This feedback loop will ensure mitigation is responsive to any unexpected issues that arise and, therefore, the construction phase of the proposed development will not adversely affect the integrity of either of the relevant European sites concerned.

Surface water management measures to be installed prior to, or at the same time as the works they are intended to drain. The effectiveness of these measures designed to minimise runoff entering works areas and capture and treat silt-laden water from the works areas, will be monitored continuously by the ECoW.

7 ENVIRONMENTAL AUDITING, COMPLIANCE & REVIEW

7.1 AUDITING

Routine inspections of construction activities will be carried out daily by the appointed Contractors environmental staff to ensure all control measures to ensure the proposed works are being carried out in accordance with the CEMP, EIS and NIS.

Records of environmental inspections shall be maintained by the appointed contractor. Environmental site inspections will be carried out by suitably trained staff.

All environmental records will be made available to the Local Authority if requested.

7.2 ENVIRONMENTAL COMPLIANCE

The following definitions shall apply in relation to the classification of Environmental Occurrences during construction:

Environmental Near Miss

An event that could have resulted in an environmental incident but did not, either by chance or through timely intervention - **See Section 4.10.3** for examples

Environmental Exceedance

An environmental exceedance event occurs when monitoring results indicate that limits for a particular environmental parameter has been exceeded.

Environmental Non-Compliance

- Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements.
- The Contractors and sub-contractors must notify ESB of any complaints or environmental incidents within 24hrs of occurrence.
- Where significant incidents occur requiring the involvement of statutory authorities or emergency services or where any pollution events occur, ESB shall be notified within 1 hour.
- An exceedance will immediately trigger an investigation into the reason for the exceedance occurring and the application of suitable mitigation where necessary.
- Exceedance events can be closed out on achieving a monitoring result below the assigned limit for a particular environmental parameter

7.3 REVIEW & CORRECTIVE ACTION

- Corrective actions may be required on site where a non-compliance has been identified as a result of audits, routine monitoring, incidents or complaints from third parties.
- A corrective action is implemented to rectify an environmental problem on-site
- Corrective actions will be implemented by the Contractor with input from the ECOW
- It is the responsibility of the Contractor to maintain a record of non-compliance(s) and respective corrective actions (Corrective Action Report or CAR)
- A corrective action is implemented to rectify a non-compliance on-site
- Corrective actions will be implemented by the Site Manager, as advised by the ECoW
- Corrective actions may be required as a result of the following;
    - Environmental Audits
    - Environmental Inspections and Reviews
    - Environmental Monitoring
    - Environmental Incidents
    - Environmental Complaints
- A Corrective Action Notice will be used to communicate the details of the action required to the contactor.
- A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required.
- The Corrective Action Notice, when completed, will include details of close out and follow up actions to prevent reoccurrence.
- The appointed Contractor shall also maintain a register of lessons learned and ensure site personnel are briefed on these lessons.

7.4 RECORD KEEPING

It is the responsibility of the Contractor to maintain records of the following (but not limited to):

- Records of staff training
- Records of environmental inductions
- Records of environmental incidents
- Records of environmental monitoring
- Records of environmental audits
- Records of environmental audits and inspections
- Records non-compliance and corrective actions
- Records of lessons learned
- Records of complaints

The frequency and scope of inspections and monitoring will be agreed in advance with ESB specialists and details shall be updated in the CEMP.