Sure Partners Limited

ARKLOW BANK WIND PARK PHASE 2 **ONSHORE GRID INFRASTRUCTURE**

Natura Impact Statement APPENDICES

Appendix B. Construction Environmental Management Plan

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Appendix B

Construction and Environmental Management Plan

Appendix B

Construction Environmental Management Plan

Sure Partners Limited

Construction Environmental Management Plan (CEMP)

Arklow Bank Wind Park Phase 2

Onshore Grid Infrastructure

(Project Ref.LF100034)

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Arklow Bank Wind Park Onshore Grid Infrastructure

CONTENTS

DOCUMENT CONTROL

DOCUMENT VERSION			
Version No.: V.1.1			**Date: March 2021**
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Comments:	Final Version		

DOCUMENT REVISIONS			
Revision No.1:	**Description:**		**Date:**
Revision Details:	Incorporation of comments from SSE Legal review, comments from project/consent manager etc.		
	Name:	**Position:**	**Signature:**
Revised by:			
Checked by:			
Reviewed by:			

DOCUMENT DISTRIBUTION RECORD			
Version and Revision No.:	**Document**	**Date of Issue**	**Recipient**
V1.0	Final Version		SSE internal(consultants)
V1.1	Final Version	29 March 2021	SSE / planning application

GLOSSARY

The following defines some of the terms used throughout this document:

The *Employer* – The Client i.e. the entity commissioning the construction of the onshore grid infrastructure and associated civil infrastructure. That is, Sure Partners Limited (SPL).

The *Contractor* / Principal Contractor (PC) – The *Contractor* responsible for Civil Infrastructure; the Contractor as defined in the Safety, Health and Welfare at Work (Construction) Regulations 2013.

Decommissioning – Decommissioning is a process including the partial removal of the onshore grid infrastructure at the end of its natural operational phase. Decommissioning works will involve similar tasks / impacts as construction works and will be subject to additional detailed proposals to be submitted to the Planning Authority prior to the commencement of the decommissioning works.

Environmental (Ecological) Clerk of Works (ECoW) – The ECoW is an independent specialist appointed by the *Employer*, typically with an ecological background, albeit with practical experience of broad environmental issues associated with construction. In accordance with relevant planning conditions, applicable regulations and good practice, the ECoW monitors environmental compliance and provides advice to the *Employer* and *Contractor* where required. The ECoW role and associated responsibility is outlined in this document.

Geotechnical Engineer – The Geotechnical Engineer is a technical specialist appointed by the *Contractor.* The Geotechnical Engineer monitors the construction works, ensuring that excavations and material stockpiles are managed in an appropriate manner to prevent the occurrence of material instability. The Geotechnical Engineer provides advice to the *Employer* and *Contractor* where required. The Geotechnical Engineer role and associated responsibility is outlined in the Works Information (and this CEMP).

Reinstatement – Reinstatement works are generally undertaken during construction and aim to redress impacts on the landscape as part of the construction process. Reinstatement is undertaken as soon as possible following the construction works in each area, such as the reinstatement of road verges, agricultural grasslands and other areas that may be disturbed as a result of the construction process.

1 INTRODUCTION

1.1 Construction Environmental Management: Aims & Objectives

1.1.1 This document provides information relating to environmental management for the Arklow Bank Wind Park (ABWP) Phase 2 Onshore Grid Infrastructure (OGI), here after referred to as the proposed development. This document has been prepared to inform the Planning Authority and statutory consultees of the proposed management methods to be employed during the construction of the proposed development.

1.1.2 The principal objective of this document is to provide information on the proposed infrastructure and to detail appropriate measures in the avoidance, minimisation and control of adverse environmental impact associated with the proposed development. Furthermore, this document aims to define good practice as well as detailing specific commitments relating to environmental protection as identified in the Environmental Impact Assessment Report (EIAR) (including appendices) and any planning conditions associated with a future planning consent (refer to **Section 2.2**).

1.1.3 The Construction Environmental Management Plan (CEMP) will form part of the *OGI Works Contract* (hereafter, the *Contract*). The methods and principles contained herein, as well as within referenced legislative instruments and published guidance documents, will be adhered to by the *Contractor* in developing construction method statements and other plans relating to environmental management as required by the *Contract*.

1.1.4 This version of the CEMP presents minimum environmental management requirements to be adhered to by the *Contractor*. This CEMP will be updated following receipt of planning consent to incorporate relevant planning conditions and further details on environmental management measures to be applied during the construction period. The CEMP will be a key construction contract document, which will ensure that all mitigation measures, which are considered necessary to protect the environment, are implemented.

1.1.5 The *Contractor* submits all relevant information as detailed in this document to the *Employer* for acceptance in accordance with the contract provisions. No construction works commence prior to the *Employer's* acceptance. Once approved, the *Employer* provides the *Contractor* with an electronic copy of the final CEMP which the *Contractor* maintains for the duration of the works (i.e. CEMP Version 2.0).

1.1.6 This document is read and implemented onsite in conjunction with industry good practice, published guidance documents, and other documents referred to within the CEMP (**Section 13**).

1.1.7 A **Checklist** has been included in **Section 14**, providing the *Contractor* with a summary of the minimum information to be provided to the *Employer* pre-, during and post-construction.

2 PROJECT INFORMATION

2.1 Overview of Arklow Bank Wind Park Phase 2

2.1.1 The Arklow Bank Wind Park (ABWP) is an offshore wind farm, located off the coast of County Wicklow, on the east coast of Ireland. A Foreshore Lease was granted for the development of a wind park on the Arklow Bank in 2002. Arklow Bank Wind Park Phase 1 was constructed in 2003 – 2004 consisting of seven wind turbines. Phase 1 is owned and operated by Arklow Energy Limited under a sublease to the Foreshore Lease. Sure Partners Limited (SPL), a wholly owned subsidiary of SSE plc (SSE), is now proposing to develop the remainder of ABWP, Arklow Bank Wind Park Phase 2, hereafter referenced as the Project.

2.1.2 The proposed development forms part of the overall Arklow Bank Wind Park Phase 2 Project. This Project comprises three distinct elements:

1. Offshore Infrastructure;
2. Onshore Grid Infrastructure - the proposed development to which this CEMP relates; and
3. Operations and Maintenance Facility (OMF)

2.2 Proposed Development

2.2.1 The proposed development, which is the subject of this CEMP, comprises the Arklow Bank Wind Park Phase 2 Onshore Grid Infrastructure (OGI) to be developed as part of the Project. The proposed development will comprise:

- Landfall for two offshore export circuits from the High Water Mark (HWM) to two Transition Joint Bays (TJB) at Johnstown North, located approximately 4.5km northeast of Arklow Harbour,
- Connection by two underground 220kV high voltage alternating current circuits, and fibre optic cables over a distance of c. 6km, from the landfall to the new onshore 220kV substation,
- A new onshore 220kV substation, to be located at Shelton Abbey, north of the Avoca River, approximately 2.1km northwest of Arklow town consisting of two connected compounds:
    1. The transmission compound with the infrastructure to physically connect to the National Electricity Transmission Network (NETN), and
    2. The connection compound with the infrastructure to allow the connection of the wind farm in accordance with EirGrid grid code requirements.
- Flood defence improvement works to the existing Avoca River Business Park flood defences located c. 500m west of the substation site;
- A 220kV overhead power line connection from the new 220kV substation at Shelton Abbey to the existing 220kV transmission network located c. 200m from the substation site.

2.3 Planning Conditions and Commitments Register

Following receipt of planning consent, if granted, this CEMP will be updated following the appointment of the contractor, and prior to commencing the works on site. A draft Commitments Register has been prepared and included in **Appendix A**, detailing the commitments made in the EIAR (based on the Summary of Mitigation and Monitoring Measures in the EIAR); planning conditions will be included in the register post-consent. Therefore, adherence to the measures described in the CEMP will ensure compliance with the planning consent as far as environmental management is concerned (pre-construction and construction phase). The Commitments Register forms part of the *Contractor*'s and *Employer'*s compliance checks throughout the phases of the proposed development.

3 RESPONSIBILITIES, CORRESPONDENCE & GENERAL COMMUNICATION

3.1 Roles & Responsibilities

3.1.1 A project *Contacts Sheet* (**Table 3.1**) provides a list of all *Employer*, *Contractor* and relevant third-party contact details. The *Contractor* updates this sheet and keeps it current for the duration of the *Contract*.

3.1.2 The *Contractor* is responsible for obtaining all necessary consents, licences and permissions for all activities as required by current legislation governing the protection of the environment.

3.1.3 The *Contractor* considers the mitigation measures and good practice construction methods detailed within this document in the Contractor's design and in any detailed environmental plans as required by the *Contract.*

3.1.4 A copy of this CEMP and related files (e.g. Waste Transfer Notes) will be kept in the site offices for the duration of the construction phase and will be made available for review at any time. Upon completion of the construction works, the *Contractor* submits a complete digital copy of the final set of information to the *Employer* for their records. This information will include electronic scans of all relevant hard copy reports, data, field records and correspondence which are generated over the course of the construction phase, including the records highlighted in **Section 3.8** below.

3.1.5 Where the *Contractor* has standard documents within its own Environmental Management System or Environmental Management Plan, that cover a particular requirement of this CEMP, they will either be inserted or cross-referenced within the relevant section of the final CEMP.

3.1.6 The *Contractor* ensures that the Environmental (Ecological) Clerk of Works (ECoW) is timeously informed of all site activities, including all programme changes, to ensure advanced checks and monitoring can be arranged. This extends to any preliminary works.

3.1.7 To ensure compliance of the works with this document and pollution prevention requirements set out in **Section 5**), the *Employer* and the ECoW regularly monitor the *Contractor's* works. **Should the *Employer* or ECoW identify any failure to comply with the requirements of this document or the *Contractor's* own method statements the *Employer* or ECoW may stop the associated works (via instruction to the *Contractor's* Project Manager) until such time as the failure is rectified**. Any associated cost or time delay incurred will be borne by the *Contractor.*

3.2 Contractor's Environmental Manager

3.2.1 The *Contractor* employs an Environmental Manager with appropriate experience and expertise for the duration of the construction phase to ensure that all the environmental design, control and mitigation measures outlined in the CEMP/EIAR and supporting planning documentation in relation to all aspects of the environment are implemented. The Environmental Manager together with an environmental team and in consultation with the ECoW, deals with drainage maintenance, mitigation measures and monitoring. This Environmental Manager will be awarded a level of authority and will be allowed to stop construction activity if there is potential for adverse environmental effects to occur.

3.3 Environmental Clerk of Works (ECoW)

3.3.1 The *Employer* appoints an appropriately qualified and competent environmentalist or ecologist as **Environmental Clerk of Works (ECoW)** to manage and ensure *Contractor* compliance with this CEMP.

3.3.2 The ECoW will have a minimum of 5 years of relevant site experience and will be a full-time role for the duration of site activities. Thereafter the role may be part-time, subject to ongoing compliance of site activities with the CEMP (refer to **Section 3.3.3** below for ECoW responsibilities). For ECoW powers in relation to halting works refer to **Section 3.1** above.

3.3.3 The ECoW undertakes relevant environmental tasks / training prior to and during the construction works. Fundamentally, the ECoW shall be responsible for:

- ***Monitoring and maintaining temporary drainage systems*** in accordance with the CEMP, including the direction of civils works team to implement, bolster and remediate (as necessary) water pollution prevention measures as detailed in **Sections 5 and 6** herein.
- ***Monitoring implementing habitat and species protection measures*** in accordance with the CEMP, including pre-construction verification checks and implementing demarcation measures. Refer to **Section 10** for specific details / tasks.
- ***Developing a positive environmental culture*** via training and engagement with site management and, importantly, site operatives to increase awareness and promote timeous remediation / reporting.
- ***Communicating statutory requirements and good environmental practices*** outlined in the CEMP, principally via a schedule of toolbox talks informed by site activities and recorded non-compliance.

3.4 Geotechnical Engineer

3.4.1 The *Contractor* employs a geotechnical engineer to monitor the construction works, ensuring, for example, that excavations, material stockpiles, and HDD drilling are managed in an appropriate manner as required by the contract (including this CEMP).

3.5 Community Liaison Officer

3.5.1 The Community Liaison Officer will be appointed by the *Contractor* and will be responsible for managing tasks such as the following:

- Alerting neighbouring residents of the works or particular activities commencing in their area

- Briefing neighbours on progress and issues likely to affect them, such as traffic management measures, as necessary;
- Liaison with Wicklow County Council and emergency services as appropriate; and
- Liaison with local Gardaí, particularly in relation to traffic movements and permits where necessary.

3.6 Community Engagement Manager

3.6.1 The Community Engagement Manager is employed by the *Employer*. The dedicated role is in place right through the project phases to facilitate engagement with the community. The Community Engagement Manager will work closely with the Community Liaison Officer.

3.7 Archaeological Consultant

3.7.1 The Archaeological Consultant will be appointed by the *Employer* to undertake a programme of archaeological testing in advance of construction.

3.8 Correspondence, Records & Reporting

3.8.1 The *Contractor* provides a complete record of all relevant communication and reports associated with all aspects of environmental management and implementation of this document. As a guide, the following records will be maintained:

- *Minutes and attendance record* of start-up meeting (onsite meeting prior to commencement of construction works). Attendance required by *Employer*, *Contractor,* ECoW and all other relevant personnel responsible for environmental management during the project.
- Weekly rolling **Environmental Risk Log** – this includes the following components:
  - Environmental Risk Log including look ahead activities with required mitigation (including weather forecasts), discussed and recorded at scheduled weekly construction meetings. This will cover all environmental sensitivities, including ecology, archaeology and water quality/drainage mitigation locations/measures;
- *Employers* and *Contractor Audit Reports* (according to respective corporate procedures).
- *Waste Management Records*, as defined in **Section 7** and **Appendix C** herein.
- *Water Quality Monitoring Records*, documenting the *Contractor's* visual checks of waterbodies and water quality monitoring as outlined in **Section 5**.
- *Licences and Consents* **-** copies of all permissions, consents, licenses and permits, including related correspondence.
- *General Correspondence* - all other relevant internal and external communication records relating to environmental management issues and implementation of the CEMP.

3.9 Site Induction

3.9.1 The *Contractor* ensures that all contractor employees, sub-contractors, suppliers, and other visitors to the site are made aware of the content of this document that is applicable to them. Accordingly, environmental specific induction training will be prepared and presented to all categories of personnel working and visiting the site.

3.9.2 As a minimum, the following information will be provided to all inductees:

- Identification of specific environmental risks associated with the work to be undertaken onsite by the inductee.
- Summary of the main environmental aspects of concern at the site:
  i. species and / or habitat protection requirements, e.g. ecological exclusion zones and contact details for the ECoW;
  ii. archaeological safeguarding measures, e.g. requirements for watching brief and contact details for the project ACoW;
  iii. pollution prevention and protection of the water environment (e.g. silt mitigation measures and refuelling);
  iv. waste management (including littering); and
  v. plant service and repair procedures, specifically service location and the disposal of waste oils and service components.
- Environmental Incident and Emergency Response Plan.

3.9.3 The *Contractor* provides an ***Environmental Risk Map*** illustrating environmentally sensitive areas and potential sources of pollution (e.g. water buffers, refuelling areas, location of spill kits, fuel tanks etc.). The *Environmental Risk Map* will be used during the induction and prominently displayed in the compound areas. In consultation with the ECoW, the *Contractor* updates the map as required. In accordance with **Section 3.10**, any update will trigger a toolbox talk to clearly communicate the change and offer opportunity for any necessary clarifications.

3.10 Training and Toolbox Talks

3.10.1 During construction, in order to provide on-going reinforcement and awareness training, the above topics, along with any other environmental issues which arise onsite, will be discussed at regular toolbox talks.

3.10.2 Toolbox talks and training will be delivered by specialist personnel onsite (e.g. ECoW) as required.

3.10.3 The *Contractor* submits a **schedule for toolbox talks** at least one week prior to commencement of works. The proposed schedule – to be considered as a live document - shall be consistent with the programme of works. Additional toolbox talks shall be added as required based on circumstances such as unforeseen risks, repeated observation of bad practices, perceived lack of awareness, pollution event, etc.

3.10.4 Specifically, the *Contractor* provides, as a minimum, the following environmental training by competent staff/contractors:

- Training on the use of spill kits (on ground and in surface waters), to be provided on a regular basis (to account for staff/subcontractor changes etc);
- Training on silt mitigation e.g. installation of silt fencing etc., silt mitigation measures to relevant construction / site staff; and

3.10.5 Other toolbox talk topics will include but are not necessarily limited to the following:

- Material handling, including: excavation, segregation, storage and reuse/disposal of excavated materials;

- Groundwater and surface water, including: managing surface water ingress into excavations, dewatering excavations, managing pumped water and identifying and treating contaminated groundwater or surface water;
- Waste management, including waste storage, waste segregation and littering;
- Control of fuel and refuelling, and fuel handling procedures;
- Surface water run-off, drainage control and silt mitigation; and
- Ecologically and archaeologically sensitive areas.

3.10.6 The *Contractor* maintains records of all toolbox talks and training and makes these records available to the *Employer* if requested.

3.11 Environmental Audits

3.11.1 The *Contractor* undertakes a programme of environmental audits, including audits of his sub-contractors, on a quarterly basis and provides an audit report to the *Employer* within 2 weeks of the audit being undertaken.

3.11.2 Environmental audits may be completed at any time by the *Employer,* but at least one per quarter. The *Contractor* maintains a record of all completed audit forms, and records of corrective action and close outs.

3.11.3 The *Contractor* undertakes environmental inspections on a daily and weekly basis (refer to individual Sections) and provides relevant records to the *Employer* when and as requested.

3.12 Risk Assessment and Method Statements

3.12.1 The *Contractor* provides risk assessments and method statements (RAMS) for all works and tasks prior to these being undertaken. These documents take into account and address all of the environmental aspects of the planned works and will include proposed mitigation measures, provided to the ECoW at least one week in advance of such works starting.

3.13 Notice Boards

3.13.1 The *Contractor* provides and maintains project environmental notice board(s) which are positioned to ensure that all operatives have the opportunity to review a notice board on a daily basis. As a minimum this will include one notice board in each of the site compounds.

3.13.2 The environmental notice boards are maintained by the *Contractor* and will be updated at least monthly. As a minimum, the notice boards contain:

- Description of the key environmental risks and intended risk mitigation measures, together with accompanying Environmental Risk Map illustrating the location of the key risks and required exclusion zones / buffer zones and location of emergency response equipment, and
- Key contact numbers and responsible personnel identified within the Environmental Incident and Emergency Response Plan (EIERP, refer to **Section 6**).

TABLE 3.1
CONTACTS SHEET
(Table to be completed by *Employer* and *Contractor* prior to commencement. This table will be updated and kept current by the *Contractor* for the duration of the Contract)

COMPANY	POSITION	NAME	TEL / MOBILE NO.	E-ADDRESS
Sure Partners Limited	Project Manager	TBC		
Sure Partners Limited	Construction Manager	TBC		
Sure Partners Limited	Site Supervisor	TBC		
Sure Partners Limited	Community Engagement Manager	TBC		
Sure Partners Limited	SPL Civil Engineer	TBC		
Contractor – tbc	Contractor's Project Manager	TBC		
Contractor – tbc	Site Agent	TBC		
Contractor – tbc	Foreman	TBC		
Contractor – tbc	Environmental Manager	TBC		
Contractor – tbc	Geotechnical Engineer	TBC		
Contractor – tbc	Community Liaison Officer	TBC		
TBC	Environmental Clerk of Works (ECoW)	TBC		
TBC	Archaeological Consultant	TBC		
Wicklow County Council		TBC		
National Parks and Wildlife Service (NPWS)		TBC		
Inland Fisheries Ireland IFI		TBC		
Specialist Emergency Contractor (specify)	TBC	TBC		

TABLE 3.2
MAIN TASKS AND RESPONSIBILITIES – CONSTRUCTION PHASE

Task	*Contractor*							Employer				ECoW	Visitors
	Project Manager	Site Agent	Site Foreman	Environmental Manager	Geotechnical Engineer	Community Liaison Officer	Sub-Contractors	Project Manager	Construction Manager	Community Engagement Manager	Site Supervisor		
Provide information (in accordance with contractual timelines)	☑												
Start Up Meeting	✓	✗	✗	✗	✗	✗	(✗)	☑	✓	✗	✗	✗	
Site Inductions	☑	✓	✗	✓	✗		✗	(✗)	✗		(✗)	✓	✗
Obtaining all relevant permissions, consents, licenses and permits	☑			✓								✓	
Weekly progress meetings including *Contractor*, *Employer*, Geotechnical Engineer, Environmental Specialist/Manager/Engineer) updates/issues	☑	✗	(✗)	✓	(✗)	(✗)	(✗)	(✗)	✗	(✗)	✓	✓	
Monthly or weekly Environmental Log / Report												☑	
Liaison with regulator / statutory consultees	☑			✓					✓			✓	
Liaison with neighbours, Garda and Wicklow County Council						☑				☑			
Environmental checks and monitoring (e.g. dust, oils and chemicals storage, drainage mitigation, waste management, plant etc)	✓	☑	☑	✓	✓		✓		✓		✓	☑	
Environmental monitoring and analysis (Water Quality Monitoring Plan)		✓		✓								✓	
Ecological inspections and monitoring and compliance checks	✓	✓	✓				✓					☑	
Record keeping (e.g. waste documentation, licences, training, incidents, mitigation designs, material, waste and risk registers etc)	☑			✓	✓			☑	✓		✓	☑	
Environmental audits / inspections	✓			☑								☑	
Communicating environmental observations and suggested improvements	☑			✓		☑	☑	☑	☑	☑	☑		☑

KEY:

☑	Lead / Responsible (may apply to several roles)
✓	Provide support (may apply to several roles)
✗	Attend / take action (may apply to several roles)
(✗)	Optional / as required

Note: This table details the main tasks / responsibilities. Following agreement between the *Employer*, the *Contractor,* tasks/responsibilities may be re-assigned.

4 COMMUNITY LIAISON PLAN

4.1 Community Liaison Plan

4.1.1 SPL recognises the importance of effective community liaison in order to ensure public safety and welfare during the works, to reduce nuisance to residents and the local community, and to help ensure the smooth running of construction activities. To this end, this Community Liaison Plan has been prepared. The purpose of this plan is to ensure good relations with the neighbouring community. Key aims of the Plan are to:

- Provide frequent and timely information to the public during the construction phase, (particularly to nearby residents and building occupants);
- Provide the correct points of contact and be responsive to queries and complaints; and
- Ensure good housekeeping in all aspects of the operations on site to minimise nuisance.

4.1.2 The contractor will take all reasonable steps to engage with stakeholders in the local community, focusing on those who may be affected by the construction works including nearby residents, businesses, community resources and specific vulnerable groups.

4.1.3 Communication with the local community, Wicklow County Council and other relevant stakeholders will be undertaken at an appropriate level and frequency throughout construction. The *Employer* appointed Community Engagement Manager will be involved throughout and will work with the Contractors Community Liaison Officer on all aspects of community engagement. The Community Liaison Plan will be updated by the contractor prior to construction, in consultation with the Community Engagement Manager, and will specify obligations in relation to community and stakeholder engagement that the contractor must adhere to. Where communications are related to environmental issues, the environmental manager will be involved, if appropriate.

4.1.4 A significant part of the plan is the ‘good neighbour’ policy. Key aspects of this policy include:

- Implementation of the policy from the commencement of construction;
- Providing a point of contact for queries and complaints;
- Minimising causes of nuisance;
- Maintaining access to neighbouring premises;
- Clear and concise information, distributed widely and updated frequently; and
- Undertaking timely liaison with stakeholders.

4.1.5 With regard to liaison, the contractor will be required to comply with the Plan and develop it further with additional information, which will include providing the details of how the local community, road users and affected residents will be notified in advance of the scheduling of major works, the temporary traffic diversions and the progress of the construction works.

4.1.6 Details of the available communication channels/points of contact for members of the public to contact the project team during construction will be established in advance of the commencement of construction and displayed around working areas. The contractor’s additional details will include the following:

- Contractor’s community relations policy;
- Personnel nominated to manage community relations;
- A methodology for processing observations, queries and complaints from the general public, relevant authorities, the media and emergency services; and
- The strategy for project-wide liaison with all relevant parties.

4.1.7 The contact details for the Community Liaison Officer will be posted on all construction site notice boards and on any other information or correspondence, which may be distributed from time to

time.

4.2 Advance Notice of Works

4.2.1 The contractor will ensure that local residents, businesses, occupiers, general users of the area and stakeholders are informed in advance of construction activities that may affect them. The contractor's detailed procedures and the responsible personnel will be identified in the CEMP, when it is updated by the contractor prior to construction.

4.2.2 All notifications will detail the nature of the works, estimated duration and working hours. All notifications will include a project-specific contact number to which any enquires can be directed. The contractor will be responsible for preparing and issuing the notifications subject to the relevant approval and consents.

4.3 Enquiries and Complaints

4.3.1 The contractor will establish a process for handling all enquires including complaints. All enquires will be recorded and a log will be maintained to include details of the response and action taken. The log will be available for inspection if requested by Wicklow County Council. All observations, queries and complaints will be dealt with in a timely manner.

4.3.2 The *Employer*, including the Community Engagement Manager, Environmental Manager and ECoW will be immediately informed of any environmental-related issues that have been raised. The environmental manager will be responsible for informing Wicklow County Council, relevant stakeholders and statutory bodies, as appropriate, about such issues.

5 GENERAL SITE MANAGEMENT AND POLLUTION PREVENTION & MITIGATION

5.1 Responsibility

5.1.1 The *Contractor* is responsible for pollution prevention for the duration of the contract and until such time as permanent measures, such as permanent drainage and silt mitigation controls, are deemed to be adequate and appropriately constructed.

5.1.2 The *Contractor* ensures that all staff and subcontractors working on site will be familiar with pollution prevention and mitigation measures as detailed in this document. This includes subcontractors, *Employer's* direct contractors and other *Employer's* representatives working on the site.

5.1.3 It is the responsibility of the *Contractor* to contact the relevant statutory and non-statutory bodies e.g. Inland Fisheries Ireland (IFI), and stakeholders in the vicinity of and downstream of the proposed development, so that the requirements and interests of these parties are adhered to and protected throughout the duration of the Contract.

5.1.4 Prior to works commencing on site, the *Contractor* prepares a **Pollution Prevention Plan (PPP)** in line with the **below requirements** (as a minimum) and communicates the contents to all staff (induction / toolbox talks). The PPP covers all potentially polluting activities, taking into account good practice standards[1]. The *Contractor* provides the PPP to the *Employer* prior to start of works on site.

5.1.5 The *Contractor* monitors adherence to the plan throughout the works. The *Contractor* communicates the PPP and any changes/updates of the PPP to all personnel on site.

5.2 Good Housekeeping and General Pollution Prevention Measures

5.2.1 The *Contractor* will ensure "good housekeeping" at all times. The following points (not exhaustive) indicate general pollution prevention measures in accordance with published guidance (**Section 13**) and project commitments. Pollution prevention measures relating to specific tasks are also detailed in the respective sections of this document.

5.2.2 This will include, but not necessarily be limited to, the following measures:

5.2.3 General maintenance of working areas and cleanliness of welfare facilities and storage areas;

5.2.4 Provision of site layout map showing key areas such as first aid posts, spill kits, material and waste storage and welfare facilities;

5.2.5 Maintaining all plant, material and equipment required to complete the construction work in good order, clean, and tidy;

5.2.6 Keeping construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;

5.2.7 Provision of signs giving details of site management contact numbers, including out of hours, and public information at the boundaries of the working areas;

5.2.8 Provision of adequate welfare facilities for site personnel;

[1] Refer to Section 13 for relevant documents

5.2.9 Installation of appropriate security, lighting, fencing and hoarding at each working area;

5.2.10 Effective prevention of oil, grease or other objectionable matter being discharged from any working area;

5.2.11 Provision of appropriate waste management at each working area and regular collections to be arranged;

5.2.12 Prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests. If infestation occurs the *Contractor* will take appropriate action to eliminate and prevent further occurrence;

5.2.13 Maintenance of wheel washing facilities and other contaminant measures as required in each working area;

5.2.14 No discharge of site runoff or water discharge without agreement of the relevant authorities;

5.2.15 Prohibition of open fires at all times;

5.2.16 Use of less intrusive noise alarms, which meet the safety requirements, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms;

5.2.17 Maintenance of public rights of way, diversions and entry/ exit areas around working areas for pedestrians and cyclists where practicable and to achieve inclusive access;

5.2.18 All loading and unloading of vehicles will take place off the public highway wherever this is practicable; and

5.2.19 Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

5.3 Hours of Work

5.3.1 The core construction working hours for the proposed development will be:

- 7am to 7pm from Monday to Saturday; with the potential for some works taking place outside these hours, including:
    - Equipment lifts over the Arklow to Gorey rail line near the substation site for health and safety and Irish Rail compliance purposes;
    - HDD works will occur 24 hours a day, 7 days a week as required; and
    - Commissioning and pre-commissioning may also take place 24 hours per day, seven days per week

5.3.2 All rock breaking/fracturing activities, pile driving and breaking out of existing concrete will be undertaken during daytime hours. The removal of waste material off site by road and regular deliveries to site will, where appropriate, be generally confined to outside of peak traffic hours.

5.3.3 The *Contractor* may require a period of up to one hour before and one hour after core working hours for start-up and shut down activities in working areas. Activities permitted may include deliveries and unloading of materials, movement of staff to their place of work, maintenance and general preparation works. Excepted as noted in **Section 5.3.4** below, the use of plant or machinery likely to cause disturbance, other than for HDD works, will not be permitted outside of

the core working hours.

5.3.4 It may be necessary, for example, due to weather constraints, specialist subcontractor availability or the nature of the activity, to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the *Contractor* in advance with Wicklow County Council and scheduling of such works will have regard to nearby sensitive receptors, who will be notified in advance.

5.3.5 In the case of work outside of the core working hours required in an emergency or which if not completed would result in an unsafe or harmful situation for workers, the public or local environment, Wicklow County Council will be informed as soon as reasonably practicable of the reasons and likely duration and timing.

5.4 Site Security

5.4.1 The security of the works areas will be the responsibility of the *Contractor* who will provide adequate security to prevent unauthorised entry to or exit from any working areas. The following measures may be used to prevent unauthorised access:

- Installation CCTV and alarm systems where required;
- CCTV and security systems will be sited and directed so that they do not intrude into occupied residential properties;
- Provision of adequate security guards and patrols;
- When there is no activity on site, site gates will be closed and locked and appropriate site security provisions;
- Consultation with neighbouring properties and local crime prevention officers including Wicklow County Council and An Garda Síochána on site security matters as required; and
- Prevention of access to restricted areas and neighbouring properties by securing equipment on site such as scaffolding and ladders.

5.5 Hoarding and Fencing

5.5.1 A site boundary in the form of temporary hoarding will be established around each of the temporary construction compounds with hoarding or fencing used around each of the working areas. These will be established before any significant construction activity commences.

5.5.2 For the temporary construction compounds (HDD, substation and temporary cable construction compounds), the hoarding will be generally be a minimum 2m high in order to provide a secure boundary to prevent unauthorised access and delineate the works.

5.5.3 The hoarding will be typical of that used on most construction sites. Mounting posts will be erected by using a mini-digger and the posts will be set in concrete. Other working areas and site access routes will typically use a mix of fencing and other appropriate safety barriers, as these types can be more readily re-configured and re-used between working areas as the construction activities progress.

5.5.4 The following measures will be applied in relation to hoarding and fencing:

- Adequate fencing and hoardings will be installed to prevent unwanted access to temporary compounds and working areas and provide noise attenuation, screening, and site security where required;

- Appropriate sight lines/visibility splays will be maintained around accesses to temporary compounds and working areas from the public road to ensure safety of both vehicles and pedestrians is preserved;
- Temporary fences may be used in certain areas, such as for short term occupation of working areas;
- Display information boards will be provided with out of hours contact details, a telephone helpline number for comments/complaints and information on the works;
- Notices to warn of hazards on site such as deep excavations, construction access will be installed on site boundaries; and
- Hoarding and fencing will be maintained free of graffiti or posters;

5.5.5 Notwithstanding the fencing and hoarding, existing walls, fences, hedges and earth banks will be retained, where feasible. Additional fencing will be provided for tree protection where required.

5.6 Services and Lighting

5.6.1 Services and Utilities – site services will be installed as part of the enabling works in parallel with the rearrangement and diversion of existing utilities. Working areas will be powered preferably by mains supplies and by diesel generators where an electrical supply is not available.

5.6.2 The *Employer* will require the *Contractor* to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider.

5.6.3 Lighting – site lighting will typically be provided by tower mounted temporary portable construction floodlights. The floodlights will be cowled and angled downwards to minimise spillage to surrounding properties. The following measures will be applied in relation to site lighting:

- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption; and
- Lighting will be positioned and directed so that it does not to unnecessarily intrude on adjacent buildings and land uses, ecological receptors and structures used by protected species, nor cause distraction or confusion to motorists.
- Refer also to **Section 10.4** below in relation to lighting.

5.6.4 Welfare Facilities - welfare facilities will be provided, as appropriate, for construction staff and site personnel including locker rooms, drying rooms, toilets and showers. The welfare facilities will be located at the temporary construction compounds and works areas.

5.6.5 Drinking Water - potable water will be supplied from Irish Water mains where available. If not, potable water will be either transported via tanker to site or via large bottles. Typically, one delivery each week will be required for the provision of potable water.

5.6.6 Grey Water - grey water for non-drinking purposes (construction and toilets) will be sourced via rainfall collection or transported via tanker to site.

5.6.7 Wastewater - sanitary wastewater will be collected and stored on site in holding tanks, which will

be emptied on a regular basis (typically bi-weekly) by licensed contractors and disposed of appropriately.

5.6.8 Wheel Wash - where a wheel wash is installed, this will be located on impermeable surface, and water will be passed through a silt buster or other appropriate surface water management mechanism. Alternatively, a “dry” wheel wash will be used, which relies on mechanical vibration of the vehicle wheels and chassis to loosen and remove mud and debris.

5.6.9 Deliveries to Site - deliveries of materials will be planned and programmed to ensure that the materials are delivered only as they are required at the working areas. Storage of material will be at the supplier premises or at the temporary construction compound, depending on the type of material.

5.6.10 Works requiring multiple vehicle deliveries, such as concrete pours, will be planned so as to ensure queuing on the public roads around the working areas will be avoided as far as is practical.

5.6.1 The removal of waste material off site by road and regular deliveries to site will, where appropriate, be generally confined to outside of peak traffic hours.

5.7 Reinstatement of Working Areas on Completion

5.7.1 The *Contractor* will reinstate all working areas and access routes as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition.

5.7.2 Following the excavations required for the cable route along with all other associated works during construction, the temporary cable construction corridor will be reinstated to its original condition as far as practicable with the replacement of excavated materials where appropriate. If the excavated materials are not suitable for re-use, then equivalent materials may be imported for reinstatement. Acceptable materials for import may include materials classified as by products from excavations in natural soils under Regulation 15 of S.I. No. 323/2020 – European Union (Waste Directive) Regulations 2020.

5.8 Fuels and Oils

5.8.1 The *Contractor* prepares and adheres to a **Fuel Management Protocol** in line with the below requirements (as a minimum) and communicates the contents to all staff (induction / toolbox talks).

5.8.2 The *Contractor* will provide secure oil, fuel and chemical storage in over-ground bunded areas, limited to the minimum volume required to serve immediate needs with specified delivery and refuelling areas;

5.8.3 No refuelling or fuel storage within 50m of waterways and only on a sealed surface;

5.8.4 Emergency spill kits will be retained onsite at sensitive locations, with portable kits provided to plant and equipment operators; A detailed spillage procedure, as part of the Environmental Incident and Emergency Response Plan, will be put in place and all staff on site will be trained with respect to the relevant procedures to be undertaken in the event of the release of any sediment, hydrocarbons into a watercourse. In the event of spillage of any polluting substance and/or pollution of a watercourse, Wicklow County Council, Inland Fisheries Ireland and the NPWS shall be notified. A set of standardised emergency response procedures will govern the management of emergency incidents, see Environmental Incident and Emergency Response Plan in **Section 6**.

5.8.5 The *Contractor* ensures that:

- Fuel containers are stored within a secondary containment system e.g. bund to 110% of volume for static tanks or a drip tray for mobile stores;
- Ancillary equipment such as hoses, pipes are contained within the bund;
- Fuel and oil stores including tanks and drums are regularly inspected for leaks and signs of damage;
- Only designated trained operators are authorised to refuel plant on site;
- Procedures and contingency plans are set up to deal with emergency accidents or spills;

5.8.6 All ancillary fuel pipes on plant, outlets at fuel tanks etc. will be regularly checked and maintained to ensure their good state-of-repair and that no drips or leaks to ground occur. The following precautions will also be installed on fuel delivery pipes:

- Any flexible pipe, tap or valve must be fitted with a lock where it leaves the container and be locked when not in use.
- Flexible delivery pipes must be fitted with manually operated pumps or a valve at the delivery end that closes automatically when not in use. Any leaking oil from ancillary pipework must be held within secondary containment.
- The pump or valve must have a lock and be locked when not in use.
- Warning notices including “No smoking” and “Close valves when not in use” shall also be displayed.

5.8.7 Irrespective of the location of refuelling onsite, **interceptor drip trays** (or similar, e.g. plant nappies, – open metal drip trays are not acceptable) shall be available and used during all refuelling operations. Interceptor drip trays will be positioned under any stationary mobile plant to prevent oil contamination of the ground surface or water. Plant and site vehicles are to be well maintained and any vehicles leaking fluids must be repaired or removed from site immediately. Any servicing operations shall take place over drip trays.

5.8.8 Plant, site vehicles and machinery shall be checked daily and are to be well-maintained. Any machinery leaking fluids must be repaired or removed from site immediately. Any servicing operations shall take place at least 50m from watercourses (unless servicing is required at the

point of breakdown) and over interceptor drip trays.

5.8.9 The *Contractor* identifies a specialist clean-up contractor (see **Table 3.1**) to engage with in the case of a significant pollution event on site. Details of the specialist contractor will be provided to the *Employer* prior to works commencing on site. Details of the specialist contractor will be included in the Environmental Incident and Emergency Response Plan (**Section 6**).

5.9 Suspended Sediment and Adverse Weather

5.9.1 The *Contractor* shall ensure that all works are in accordance with Construction Industry Research and Information Association (CIRIA) guidance – Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (Masters-Williams et al, 2001).

5.9.2 To minimise the potential for elevated silt levels in surface water run-off, the working area used during construction will be clearly outlined prior to the commencement of works and will be kept to the minimum area necessary to effectively complete the works. Vegetation will be retained where possible.

5.9.3 Rainfall and associated surface run-off readily mobilise sediment and silt when draining through areas of construction. The *Contractor* ensures that untreated construction run-off is prevented from flowing into watercourses.

5.9.4 The *Contractor* shall ensure that no materials will be stored in flood plains or in areas which would impede flood flow paths;

5.9.5 Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding;

5.9.6 Silt traps will be employed and maintained in appropriate locations;

5.9.7 Temporary interception bunds and drainage ditches will be constructed up slope of excavations to minimise surface runoff ingress and in advance of excavation activities;

5.9.8 Excavation and earthworks will be suspended during and immediately following periods of heavy rainfall to minimise sediment generation and soil damage;

5.9.9 For the cable route, the only section of trench that will be open is that which is being excavated and in which ducts are being installed. Excavated cable trenches will be backfilled as the works progress, as soon as installation is complete, and any cement bound surround material has cured sufficiently;

5.9.10 Any groundwater or rainwater that collects in a cable trench will be pumped to locations agreed with the landowners and local authorities. Typically, this will be onto adjacent land, not directly into waterways, and through a filter medium, to avoid the build-up of silt, as some granular material will, inevitably, be pumped out with the water. The pump flowrates will match that of the water flowing into the trench, as it must be kept generally free of water. A single pump with a 75mm hose will usually be adequate to deal with rainwater running into a trench. A similar arrangement will apply at joint bays, where a sump will be cast into the concrete base for a pump.

5.9.11 At the landfall, if field drains are temporarily diverted, the *Contractor* shall put in place facilities to over pump the water into a settlement pond to limit silt discharge into the field drain downstream;

5.9.12 All works will be closely monitored and will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies.

5.9.13 Silt pollution caused by working in surface water will be minimised or prevented by keeping water out of the works area using appropriate isolation techniques, such as cofferdams, flume pipes and by-pass channels.

5.9.14 **Adverse weather** (rainfall, snowmelt) may result in increased sediment run-off and pollution of watercourses. Weather warnings will be monitored during construction to ensure that there is no flood risk to construction workers installing the cable ducts. A risk assessment will be carried out in the case of a weather warning to determine what works can proceed, and what works need to be postponed;

5.9.15 The requirement to temporarily suspend aspects of the *works* can be enforced by the *Contractor*, the ECoW or the *Employe*r.

5.10 Concrete

5.10.1 All concrete mixing and batching activities will be located in areas away from watercourses and drains;

5.10.2 Concreting works will be carried out in dry conditions where possible and concrete works will be strictly controlled and monitored; and

5.10.3 No concrete washout will be allowed to discharge to watercourses. Wash out of concrete trucks will only be permitted where the *Contractor* has provided a designated, suitably prepared wash-out area.

5.11 HDD Operations and Frac-Out Contingency Measures

5.11.1 The *Contractor* shall implement a number of specific measures with respect to HDD operations at the landfall and the relevant crossings along the cable route, as detailed below.

5.11.2 Any groundwater or rainwater that collects in the HDD drilling pit will be pumped away. Then it will be discharged onto the adjacent land, not directly into a waterway, and through a filter medium. This will avoid the build-up of silt, as some granular material will, inevitably, be pumped out with the water from the trench.

5.11.3 The *Contractor* and the ECoW will monitor weather conditions as detailed in **Section 5.9.14** and will carry out daily inspections of the mud pit to ensure the volume of the mud pit does not 'overtop' to the surrounding land. Where required, measures such as pumping to secure containment will be used where required to prevent overtopping.

5.11.4 Any bentonite (or similar HDD drilling head lubrication material) will be handled and removed by the drilling contractor. The volume of bentonite (or similar material) will be determined by the ground conditions encountered and length of HDD. Typically for a land-based HDD rig, the volume of bentonite would be approximately 10m^3 per HDD bore, and for the landfall and M11 HDD rig, the volume of bentonite would be approximately 22.5m^3 per HDD bore.

5.11.5 Any bentonite (or similar HDD drilling head lubrication material) will be handled and removed by the drilling contractor. Typically, bentonite is used, which comprises 95% water and 5% bentonite clay which is a non-toxic, natural substance. HDD will be a closed system, with drilling fluid recirculated, the drill cuttings recovered, and drilling fluid reused;

5.11.6 In order to eliminate the migration of drilling fluids through the subsurface to waterbodies the

following measures will be employed:

- Drilling pressures will be closely monitored and not exceed those needed to penetrate the formation.
- Exit and entry points for the HDD on land (exit point for landfall HDD is on seabed) will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies.
- If pressure drops during drilling or if there is a lack of returns the drilling will stop immediately to allow an assessment of a potential leakage of drilling fluid into the surrounding formation. A leak stopping compound, such as mica, may be used to prevent the leak from migrating further into the formation. If the leak stopping compound is not successful, the drilling direction may need to change to avoid the area where the leak occurred.

5.11.7 While the bentonite drilling fluid is non-toxic and can be commonly used in farming practices, if sufficient quantity enters a watercourse it can potentially settle on the bottom, smothering benthic flora and affecting faunal feeding and breeding sites. The drilling contractor will develop a location specific HDD frac-out contingency plan, detailing measures to be taken to reduce the risk of bentonite breakout and measures to be taken for the protection of sensitive ecological receptors, should a breakout occur.

5.11.8 A typical procedure for managing a breakout or frac-out on land would include:

- Stop drilling immediately;
- Contain the bentonite by constructing a bund e.g. using sandbags;
- Recover the bentonite from the bund by pumping to a suitable container or back to the entry pit for recycling;
- If necessary, inert and non-toxic lost circulation material (mica) will be pumped into the bore profile, which will swell and plug any fissures;
- The area will be monitored closely to determine if the breakout has been sealed;
- Check and monitor mud volumes and pressures as the works recommence.

5.11.9 A typical procedure for managing a breakout or frac-out under water would include:

- Stop drilling immediately;
- Pump lost circulation material (mica), which will swell and plug any fissures;
- Check and monitor mud volumes and pressures as the works recommence;
- Repeat process as necessary until the breakout has been sealed.

5.11.10 Any bentonite will be managed and removed by the specialist drilling contractor on completion of the operation. Water will be brought to site in tankers (to make up drilling fluid) for lubrication of the bore and to provide the requisite volumes of water to the compound. The water used will be non-saline and non-potable water.

5.11.11 The total volume of water required is estimated to be up to 450m^3 for each HDD bore at the landfall and M11 HDD, and 200m^3 for each HDD bore at the R772 HDD, assuming full drilling fluid returns are maintained. On completion of the operation the drill fluid will be disposed of to an appropriately licensed facility.

5.12 Noise

5.12.1 Noise and vibration will be minimised through the adoption of good industry practice as standard working practices across the site to ensure that noise and vibration are reduced whenever practicable. The following provisions, although not exhaustive, will be adhered to where practicable throughout the construction programme:

5.12.2 Vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, maintained in good and efficient working order, and operated in such a manner as to minimise noise emissions. The *Contractor* will ensure that all plant complies with the relevant statutory requirements;

5.12.3 Machines in intermittent use will be shut down or throttled down to a minimum when not in use;

5.12.4 Compressors will be fitted with properly lined and sealed acoustic covers which will be kept closed whenever in use. Pneumatic percussive tools will be fitted with mufflers or silencers;

5.12.5 Equipment which breaks concrete, brickwork or masonry by bending, bursting or “nibbling” will be used in preference to percussive tools. Where possible, the use of impact tools will be avoided where the site is close to occupied premises;

5.12.6 Rotary drills and bursters activated by hydraulic, chemical, or electrical power will be used for excavating hard or extrusive material;

5.12.7 Wherever possible, equipment powered by mains electricity will be used in preference to equipment powered by internal combustion engine or locally generated electricity;

5.12.8 No part of the works nor any maintenance of plant will be carried out in such a manner as to cause unnecessary noise except in the case of an emergency when the work is absolutely necessary for the saving of life or property or the safety of the works;

5.12.9 Plant will be maintained in good working order so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum; and

5.12.10 Noise emitting machinery which is required to run continuously will be housed in a suitable acoustically lined enclosure.

5.12.11 Monitoring of noise levels at the construction site boundary will be undertaken to identify where work procedures need to be modified. In the event of a valid complaint a noise monitoring protocol will be submitted to Wicklow County Council prior to commencement of any noise monitoring. The protocol will include details of:

- A description of the complaint;
- Construction activities taking place at the time of the complaint;
- Noise monitoring methodology and results; and
- Any actions taken.

5.12.12 Prior to construction works being undertaken, liaison will be undertaken with occupiers of sensitive receptors that may be adversely affected by construction noise and vibration. Providing information on the timing and durations of construction works at night and why they are required to be undertaken at night can reduce adverse effects. All communications will contain contact details to direct any questions or complaints to.

5.13 Dust

5.13.1 The *Contractor* will implement the Community Liaison Plan, that includes community engagement, before work commences on site.

5.13.2 The *Contractor* shall record all dust and air quality incidents, complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.

5.13.3 The *Contractor* shall hold regular liaison meetings with other construction sites within 500m to the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised.

5.13.4 The *Contractor* will undertake on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to Wicklow County Council on request. The frequency of the inspections will be increased during site activities with a high potential to produce dust are being carried out.

5.13.5 The *Contractor* ensures an adequate supply of water for dust suppression. Where applicable, the *Contractor* is responsible for following statutory guidance and/or obtaining necessary permissions for water for use in dust suppression. The water supply for dust suppression will be defined by the *Contractor*. The *Contractor* utilises water spraying for dust suppression on site as required[2]. The *Contractor* obtains all necessary permits and licences as required the supply of water for the purposes of dust suppression on site.

5.13.1 The *Contractor* ensures no mud or debris accumulates on the public road and the *Contractor* cleans the public road of any mud, dust or debris by suitable means. Water-assisted dust sweeper(s) are to be used on the access and local roads, to remove, as necessary, any material tracked out of the site.

5.13.2 The *Contractor* shall ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport and shall implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

5.13.3 In relation to the substation and the remediation strategy proposed, the *Contractor* shall ensure that dust generation and dermal exposure during site construction works, until the made ground is capped, will be controlled by appropriate dust control measures e.g. water sprays and suitable personal protective equipment. Where the asphalt layer is being removed, this will occur in phases and the asphalt will be replaced with granular fill as soon as possible to prevent the generation of windblown dust.

5.13.4 To minimise the generation of dust emissions to air, the *Contractor* implements the following measures:

- Prepare and maintain the site appropriately, planning site layout so that machinery and dust causing activities are located away from receptors, as far as possible
- Erect a 2m minimum site hoarding around construction compounds
- Keep site fencing, barriers and scaffolding clean using wet methods
- Cover, seed or fence stockpiles to prevent wind whipping.

[2] https://www.hse.gov.uk/copd/casestudies/dustsuppresion.htm

- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation.
- Use enclosed chutes and conveyors and covered skips
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate
- Ensure equipment and spill kits are readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
- Only remove the cover in small areas during work and not all at once
- Completes regular equipment checks, including the inspection of relevant plant and vehicle parts to ensure they are maintained in a good state of repair and are fitted with appropriate dust suppressant measures (e.g. water supply for cutting tools etc.).
- Access gates to be located at least 10m from receptors where possible.
- Ensures all material (especially fine-powders, e.g. cement) are appropriately contained and stored.

5.14 Hazardous Materials

5.14.1 At the substation, the *Contractor* will undertake surveys to identify the risk of asbestos on site. Although unlikely, given ground investigations to date, if asbestos is uncovered on site during construction, it will be double-bagged and removed from site by a competent contractor and disposed of in accordance with the relevant procedures and legislation.

5.14.2 The *Contractor* is responsible for ensuring that any hazardous materials (e.g. fuels, oils, paints, chemicals, cement bound granular mixtures etc.) brought to site are accompanied by a Safety Data Sheet (SDS)[3].

5.14.3 The *Contractor* is responsible for carrying out a risk assessment of each substance and ensuring that all appropriate storage, protective equipment and if necessary, emergency procedures are put in place on site as required by the SDS, the risk assessment and relevant regulations (COSHH Regs, Control of Substances Hazardous to Health).

5.14.4 All hazardous materials must be stored in appropriate containers, must be indelibly and legibly labelled to identify the contents, hazards and precautions required.

5.14.5 Hazardous materials on site must be stored in a bunded area and in accordance with the relevant Safety Data Sheet and risk assessment, which must be readily available and up to date.

5.14.6 Any spent (contaminated) spill kits, absorbent granules, sheets or fibres must be disposed of in accordance with relevant regulations and the Construction Waste Management Plan (see Appendix C).

[3] In accordance with REACH Regulation (Regulation (EC) No. 1907/2006)

5.15 Traffic

5.15.1 A Construction Traffic Management Plan (CTMP) has been prepared and is included in Appendix B. This CTMP will be updated by the *Contractor* prior to construction to take account of any specific consent conditions and requirements of the Planning Authority.The *Contractor* will agree the CTMP with Wicklow County Council and An Garda Síochána and will fully implement the CTMP.

5.16 Pollution Monitoring & Controls

5.16.1 The *Contractor* carries out regular (at least monthly) inspections of oil/fuel storage areas, plant and machinery, and the PPP. An inspection sheet together with information on inspection frequency and the relevant responsible *Contractor*'s representative for undertaking these inspections will be recorded by the *Contractor* and communicated to the *Employer* prior to commencement of the works.

5.16.2 Regular onsite meetings will be held to confirm the appropriate use of mitigation measures identified within the *Contractor*'s environmental documents relating to pollution control. These meetings will highlight any further issues / measures which may be relevant either prior to commencement or during the works.

5.16.3 Dust monitoring will be undertaken at the three nearest sensitive receptors (with agreement from the landowner) to the works during the construction phase. The TA Luft dust deposition limit values of 350 mg/m^2/day applied as a 30-day average.

5.16.4 Visual monitoring will be undertaken as part of the regular site audits during the construction of the proposed development to ensure existing surface water drainage runoff and natural infiltration to ground is not affected by the proposed development.

5.16.5 A monitoring regime/programme for water quality will be put in place. Turbidity monitoring will be carried out downstream, within 20m of the crossing, while works are underway at the Templerainy, Kilbride River and Johnstown North watercourse crossings to ensure that sediment levels are not significantly elevated above baseline levels.

5.16.6 The *Contractor* is required to monitor the weather forecasts to inform the programming of earthworks and stockpiling of materials. Particular regard will be given to trench excavations and other works which may be vulnerable to the generation or conveyance of run-off, and for the protection of site personnel, plant and equipment in flood prone areas.

5.16.7 All flood defence improvement works will be appropriately monitored and supervised and will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies.

5.16.8 Monitoring requirements for noise and vibration are detailed in **Section 5.12** above.

6 ENVIRONMENTAL INCIDENT & EMERGENCY RESPONSE

6.1 General Requirements

6.1.1 The *Contractor* prepares a detailed **Environmental Incident and Emergency Response Plan (EIERP)**. The EIERP contains details of emergency scenarios and relevant procedures and actions that will apply.

6.1.2 The *Contractor* communicates the EIERP as part of the site induction to all staff and visitors.

6.1.3 The *Contractor* ensures the EIERP contains contact details of relevant staff and external authorities, e.g.

- Environmental Protection Agency (EPA) and EPA 24-hour emergency incident line 1890 33 55 99
- Inland Fisheries Ireland (IFI) and IFI 24-hour pollution line 1890 34 74 24
- Specialist clean-up contractor
- Emergency Services
- Local Authority Environmental Officers
- An Garda Síochána
- National Parks and Wildlife Services
- The Coast Guard

6.2 Safety and Environmental Awareness Reports (SEAR) and Environmental Auditing

6.2.1 The *Contractor* completes a SSE Safety and Environmental Awareness Report (SEAR) for all potential (near miss) or actual environmental incident or emergency which occurs on site.

6.3 Pollution/Spill Incident

6.3.1 The *Contractor* provides a 1-page Summary Sheet containing the key information for incidents response to be used as a quick reference for any on-site personnel witnessing an incident. A laminate copy of this Summary Sheet will be located with all plant / machinery / on-site vehicles. Key Information to be provided to the ***Project Manager*** **and the ECoW within 30 minutes** of an incident (irrespective of the scale / severity of the incident):

- E.g. What substance was spilled (Material Data Safety Sheet);
- Approximate volume and time of spillage;
- Accurate location of spill (GPS/grid reference or ID/number referenced on map etc.);
- All measures taken;
- Help required i.e. manpower, machinery, expert advice, disposal, etc. and,
- Whether the spill has reached a watercourse.

6.3.2 The *Contractor* shall, in updating the EIERP, consider the impacts of pollution/spill incidents during construction and shall identify the actions to be taken in the event of a pollution incident, including the following:

- Containment measures;
- Emergency discharge routes;
- List of appropriate equipment and clean-up materials;
- Maintenance schedule for equipment;
- Details of trained staff, location and provision for 24-hour cover;
- Details of staff responsibilities;
- Notification procedures to inform the relevant environmental protection authority;
- Audit and review schedule;
- Telephone numbers of statutory water undertakers and local water company; and
- List of specialist pollution clean-up companies and their telephone numbers.

6.4 Emergency Access

6.4.1 The *Contractor* will be required to maintain access routes for the emergency services in all work areas for the duration of the construction phase and to identify the emergency site access points to each work area.

6.4.2 These will be developed in consultation with the emergency services and documented by the *Contractor*, as part of the updated CEMP prior to construction commencing, as well as being identified in the updated EIERP.

6.5 Extreme Weather Events and Flood Risk

6.5.1 The *Contractor* will consider the impacts of extreme weather events, flood risk and related conditions during construction. The *Contractor* will be required to use the short to medium range weather forecasting service from Met Eireann, or other approved meteorological data and weather forecast provider, to inform short to medium term scheduling of the works, environmental controls and mitigation measures. Refer to **Section 5.9.14** above.

6.5.2 The updated CEMP will include appropriate contingency measures to manage extreme weather events (red weather warnings from Met Éireann), see also **Section 5.9.14**, including the suspension of work, where required. The measures will include training of personnel and prevention and monitoring arrangements for weather events. Where relevant risks have been identified, the detailed construction method statements will consider extreme weather events. For example, while the flood risk is very low at the substation site, appropriate contingency measures for construction works adjacent to the Avoca River will be identified.

6.6 Fire and Explosion Risk

6.6.1 Even though the fire and explosion risk during construction are very low, the updated CEMP will include appropriate contingency measures to manage such risks. The measures will include training of personnel in fire and explosion risk awareness, risk prevention and risk monitoring.

Portable fire extinguishers, suitable for the activities at the working area, checked and maintained in working order, will be available for use at each of the working areas. Potentially flammable or hazardous substances will be stored appropriately and quantities stored will be limited to the minimum volume required to meet the immediate requirements.

6.6.2 Appropriate site personnel will be trained as first aiders and fire marshals. Monitoring of site activities to minimise fire and explosion risk will be a key part of the duties of the site safety officer and fire marshals.

7 WASTE MANAGEMENT

7.1 Construction Waste Management Plan (CWMP)

7.1.1 A Construction Waste Management Plan has been prepared and is included in Appendix C. The *Contractor* will update this plan and implement in full.

8 SOIL MANAGEMENT MEASURES

8.1 Regulatory Compliance and General Measures

8.1.1 The *Contractor* shall ensure that the adopted construction techniques will comply with the requirements of statutory bodies (Wicklow County Council and EPA) and construction will be completed in full accordance with the measures set out in this CEMP.

8.1.2 Good construction management practices will be employed to minimise the risk of transmission of hazardous materials as well as pollution of adjacent watercourses and groundwater.

8.1.3 The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination.

8.2 Ground Contamination

8.2.1 Good housekeeping (daily site clean-ups, use of disposal bins, etc.) will be carried out on site during construction, and the proper use, storage and disposal of all substances and their containers will help prevent soil contamination, as per the general measures in **Section 5**.

8.2.2 Excavations in made ground will be monitored by an appropriately qualified person to ensure that any localised areas of contamination encountered are identified, segregated and disposed of appropriately. Any identified localised areas of contamination will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the localised area of contamination does not cross-contaminate clean soils elsewhere throughout the site.

8.2.3 Potential soil and water pollution will be minimised by the implementation of good construction practices. Such practices will include adequate bunding for oil containers, wheel wash and dust suppression on site roads, and regular plant maintenance in accordance with the measures herein, the EIERP and the CIRIA guidance referenced above.

8.3 Loss or damage of topsoil

8.3.1 Excavated topsoils will be stockpiled using appropriate methods to minimise the effects of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development, will be reused for other projects where possible, subject to appropriate approvals/notifications or removed off site to a suitable licensed facility.

8.3.2 In order to reduce the compaction and erosion of topsoil outside the areas of direct construction, haulage routes will be along predetermined routes within and outside the proposed development. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practical, compaction of any soil or subsoil which is not part of the works or to remain in-situ within the proposed development will be avoided.

8.3.3 The *Contractor* will ensure that any topsoil or subsoil is assessed for re-use within the proposed development ensuring the appropriate handling, processing and segregation of the material. Where practical the removal of soil from the proposed development will be avoided. All

earthworks will be undertaken in accordance with TII Specification for Road Works (SRW) Series 600 Earthworks and project specific earthworks specifications ensuring that all excavated material and imported material is classified using the same methodology so as to allow maximum opportunity for the reuse of materials on site.

8.4 Excavation of Made Ground

8.4.1 Excavations in made ground will be monitored by an appropriately qualified person to ensure that any localised areas of contamination encountered are identified, segregated and disposed of appropriately and to ensure soils are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations. Any identified localised areas of contamination will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the contaminated material does not cross- contaminate clean soils elsewhere throughout the site.

8.4.2 Samples of ground suspected of contamination will be tested for contamination during the detailed investigation and ground excavated from these areas will be disposed of to a suitably licensed or permitted site in accordance with the current Irish waste management legislation.

8.4.3 Any dewatering in areas of contaminated ground will be designed to minimise the mobilisation of contaminants into the surrounding environment. Where dewatering in such areas is unavoidable the water will be adequately treated prior to discharge.

8.4.4 Where piling is undertaken, it will be completed following the placement of the deeper granular gas drainage layer which will also serve as a piling mat. Following this, the barrier layer and upper drainage layer will be placed around the piles and sealed. Piling may also be completed after the geosynthetic clay layer (GCL) barrier and drainage layer has been laid, which will require excavation of material and sealing the GCL around piles.

8.4.5 The geotechnical design will ensure that any future settlement on site does not lead to a disruption of the integrity of the GCL barrier layer that could lead to water ingress.

8.5 Earthworks and Excavations

8.5.1 All excavated material, where possible will be reused within the proposed development. The appointed *Contractor* will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to earthworks specifications.

8.5.2 Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development, will be used for other projects where possible, subject to appropriate approvals/notifications.

8.5.3 Earthworks haulage will be along predetermined routes within the proposed development and any deliveries to site will be along existing national, regional and local routes for importation and exportation of materials, in accordance with the Construction Traffic Management Plan (CTMP). Haulage along the cable route will be along internal haul roads/access tracks, where practicable. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will

be avoided.

8.5.4 Earthworks operations shall be carried out such that surfaces will be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water effects. Care will be taken to ensure that surfaces are stable to minimise erosion.

8.6 Pollution of soil and groundwater

8.6.1 Measures to be implemented to minimise the risk of spills and contamination of soils and waters will include:

- Employing only competent and experienced workforce, and site specific training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures;
- Ensure that all areas where liquids (including fuel) are stored, or cleaning is carried out, are in designated impermeable areas that are isolated from the surrounding area and within a secondary containment system, e.g. by a roll-over bund, raised kerb, ramps or stepped access;
- The location of any fuel storage facilities will be considered in the design of all construction compounds and will be fully bunded. These are to be designed in accordance with relevant and current guidelines and codes of best practice at the time of construction.
- Good housekeeping will be maintained at the site (daily site clean-ups, use of disposal bins, etc.) during the entire construction phase;
- All concrete mixing and batching activities will be located in designated areas away from watercourses and drains;
- Potential pollutants will be adequately secured against vandalism in containers in a dedicated secured area;
- Provision of proper containment of potential pollutants according to relevant and current codes of practice and legal requirements;
- Thorough control during the entire construction stage to ensure that any spillage is identified at early stage and subsequently effectively contained and managed; and
- Spill kits to be provided and to be kept close to the HDD and temporary construction compounds. Staff to be trained on how to use spill kits correctly.
- Refer also to **Sections 5.9** and **5.10**.

8.7 Monitoring

8.7.1 Excavations in made ground will be monitored by an appropriately qualified person to ensure that any contaminated material is identified, segregated and disposed of appropriately. Any material from identified localised areas of contamination shall be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the localised area of contamination does not cross-contaminate clean soils elsewhere.

8.7.2 Any excavation and stockpiled material shall be monitored during earthworks to ensure the

stability of slopes and to ensure that the soils excavated for disposal are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations.

8.7.3 Ground settlement, horizontal movement and vibration monitoring will be implemented during construction activities to ensure that the construction does not exceed the design limitations.

8.7.4 Movement monitoring shall be carried out during any activities which may result in ground movements or movements of any nearby structures.

8.7.5 Visual monitoring will be undertaken as part of the regular site audits during the construction of the proposed development to ensure existing surface water drainage runoff and natural infiltration to ground is not affected by the proposed development.

8.7.6 Horizontal movement monitoring of the sheet piles (if used) will be implemented during construction activities to ensure that movement does not exceed the design limitations. Appropriate remedial actions will be implemented should there be any exceedance of design limitations.

9 WATERCOURSE CROSSINGS

9.1 General Requirements for Watercourse Crossings

9.1.1 The Office of Public Works (OPW) regulate activities in or in the vicinity of rivers, lakes and wetlands, including engineering activities like river crossings and culverting. Depending on the nature of the works, these may require consent from OPW. In addition, consultation with Inland Fisheries Ireland (IFI) will be required. The *Contractor* undertakes all consultation and obtains consents/permits prior to works as necessary.

9.1.2 If damming and over-pumping is adopted for the open cut watercourse crossings the water will be discharged through a filtering medium to limit silt carry over or bed disturbance downstream of the crossing point;

9.1.3 There will be no tracking of machinery within watercourses other than the stream bed excavation for the temporary works associated with construction of the watercourse crossings for the cable route;

9.1.4 Silt pollution caused by working in surface water will be minimised or prevented by keeping water out of the works area using appropriate isolation techniques, such as cofferdams, flume pipes and by-pass channels.

9.1.5 Where short-term over pumping or flume pipes are required, equipment will be sized to accommodate surface water flow that might reasonably be expected over the period in question;

9.1.6 During the construction of the crossing of the Kilbride watercourse Inland Fisheries Ireland (IFI) will be consulted in relation to protecting fish populations. Measures include only undertaking instream works during the period July to September in the Kilbride and Johnstown North watercourses to avoid interference with the spawning migration and spawning process and to protect juvenile fish emerging from the gravels.

9.2 Open Watercourse Crossings – Biodiversity Measures

9.2.1 The Kilbride and Johnstown North watercourse crossings will be constructed using open cut trenched techniques. In addition to the general measures described in other sections herein and in the EIAR, the following specific mitigation measures will be implemented for open cut crossings of watercourses:

- Works will comply with The IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016) and IFI will be consulted with regard to any proposed over-pumping at the watercourse crossing.
- The open cut methodology will require dams to be put in place.
- Appropriate silt control measures such silt barriers (e.g. straw or silt fence) will be employed where required. Once reinstatement of the cable trench is complete, the temporary dams will be removed and over pumping ceased. No haul road is proposed at the watercourse crossing. Plant will utilise existing accesses used by landowners to avoid further works within the watercourse.
- Construction activities will be undertaken during daylight hours only. This will ensure that there is potential for undisturbed fish passage at night. The works will be temporary and will not create a significant long-term barrier to fish movement.
- Works on the Kilbride Stream will take place during the summer period from July to September inclusive, which is outside the most sensitive time for these species. Due to dryer conditions in the summer period, this will also minimise the risk of ground damage, minimises the potential for silt generation and thus minimise the risk of inadvertent ecological impacts.
- Sediment from the stream bed will be stockpiled outside of the flood plain and used to re-create the stream bed.
- Dams will be removed gradually, with silt curtains in place and under ecological supervision to minimise the potential for silt generation.
- The banks of the temporary watercourse crossings will be reformed to their original profile in accordance with both the NPWS, IFI and the landowners' requirements. The bed materials which had been removed for construction will be reinstated to the original profile. The temporary flume pipe, packing and sand-bags will be removed once the bed materials and bank profile are reinstated, ensuring the correct sequencing of substrate reinstatement.

  Final bank reinstatement may require further measures to stabilise the banks and prevent erosion. Geotextiles may be used in conjunction with seeding of an appropriate grass mix. Heavier solutions such as the importation of locally sourced large stones or rocks may also be used. Bank stabilisation works will be discussed with the NPWS/IFI to ensure that suitable materials and methodologies are being used. Any bank protection, where it is required, will be adequately keyed into both the bed and banks. The materials and methods employed will be in keeping with the surrounding environment and comply with any conditions attached to the planning approval.

10 BIODIVERSITY MEASURES

10.1 General Measures

10.1.1 Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below:

- *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*. National Roads Authority, Dublin (2010).
- *Control of water pollution from construction sites. Guidance for consultants and contractors* (C532). CIRIA. H. Masters-Williams et al (2001)
- *Control of water pollution from linear construction projects. Technical guidance* (C648). CIRIA. E. Murnane, A. Heap and A. Swain. (2006)

10.1.2 All personnel involved with the proposed development will receive an on-site induction relating to construction and operations and the environmentally sensitive nature of European sites and to re-emphasise the precautions that are required as well as the precautionary measures to be implemented. Site managers, foremen and workforce, including all subcontractors, will be suitably trained in pollution risks and preventative measures.

10.1.3 All staff and subcontractors have the responsibility to:

- Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts,
- Understand the importance of avoiding pollution on-site, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact;
- Respond in the event of an incident to avoid or limit environmental impact;
- Report all incidents immediately to the Project Manager and the Environmental (Ecological) Clerk of Works (ECoW);
- Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and
- Co-operate as required, with site inspections.

10.2 Water Quality

10.2.1 To minimise the potential for elevated silt levels in surface water run-off, the working area used during construction will be clearly outlined prior to the commencement of works and will be kept to the minimum area necessary to effectively complete the works. Vegetation will be retained where possible.

10.2.2 A set of standardised emergency response procedures will govern the management of emergency incidents, see the Environmental Incident and Emergency Response Plan.

10.2.3 A detailed spillage procedure will be put in place and all staff on site will be trained with respect to the relevant procedures to be undertaken in the event of the release of any sediment, hydrocarbons into a watercourse. Spill kits will be maintained on-site and relevant staff will be trained in their effective usage. All site personnel will be trained and aware of the appropriate action in the event of an emergency, such as the spillage of potentially polluting substances. In the event of spillage of any polluting substance and/or pollution of a watercourse, Wicklow County Council, IFI and the NPWS shall be notified.

10.2.4 Specific environmental control measures to minimise the effect on the hydrological regime, water quality and flooding as outlined in the CEMP include:

10.2.5 General Measures:

- Good housekeeping (site clean-ups, use of disposal bins, etc.) will be implemented on the site;
- No materials will be stored in flood plains or in areas which would impede flood flow paths;
- Where possible, soil excavation will not be completed during periods of prolonged or heavy rain;
- Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding;
- All construction compounds will be in areas that are at low risk of flooding (outside the 1 in 100-year flood zone);
- Secure oil and chemical storage in over-ground bunded areas, limited to the minimum volume required to serve immediate needs with specified delivery and refuelling areas;
- No refuelling or fuel storage within 50m of watercourse and only on a sealed surface;
- Emergency spill kits retained onsite at sensitive locations;
- Cessation of work and development of measures to contain and/or remove pollutant should an incident be identified;
- Silt traps will be employed and maintained in appropriate locations;
- Temporary interception bunds and drainage ditches will be constructed up slope of excavations to minimise surface runoff ingress and in advance of excavation activities;
- Excavation and earthworks will be suspended during and immediately following periods of heavy rainfall to minimise sediment generation and soil damage;

- Weather warnings will be monitored during construction to ensure that there is no flood risk to construction workers installing the cable. A risk assessment will be carried out in the case of a weather warning to determine what works can proceed, and what works need to be postponed;

- The temporary foul drainage at the construction compounds will comprise self-contained sanitary facilities, with wastewater stored and tankered off-site to appropriately licensed treatment facilities;

- Earthworks haulage will be along predetermined routes along existing national, regional and local routes for importation and exportation of materials, in accordance with the Construction Traffic Management Plan (CTMP) included in the CEMP. Haulage along the cable route will be along internal haul roads/access tracks, where practicable. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will be avoided.

- The excavated material storage area will be at least 50m from any watercourse and material side slopes will be commensurate with the type of material, to ensure slope stability and prevent erosion. The stockpile will be surrounded in silt fencing.

- Any existing field drainage present crossing the landfall site will be temporarily diverted or facilities put in place to over-pump to settlement ponds prior to discharge of treated water into the existing surface water drainage system.

- Field drains will be reinstated on completion of the works or new drainage installed to match the drainage characteristics of the ground prior to development. The landowner will be consulted on the proposed drainage provisions prior to any installation.

- Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water impacts. Care will be taken to ensure that surfaces are stable to minimise erosion.

- Excavated topsoils will be stockpiled using appropriate methods to minimise the impacts of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development, shall be used for other projects where possible, subject to appropriate approvals/notifications.

- In order to reduce the compaction and erosion of topsoil outside the areas of direct construction, haulage routes will be along predetermined routes within and outside the proposed development. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practical, compaction of any soil or subsoil which is to remain in-situ within the proposed development will be avoided.

- The Contractor will ensure that any topsoil or subsoil is assessed for re-use within the proposed development ensuring the appropriate handling, processing and segregation of the material. Where practical the removal of soil from the proposed development will be avoided. All earthworks will be undertaken in accordance with TII Specification for Road Works (SPW) Series 600 Earthworks and project specific earthworks specifications ensuring that all excavated material and imported material is classified using the same methodology so as to allow maximum opportunity for the reuse of materials on site.

- All excavated material, where possible will be reused as construction fill. The appointed Contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material.
- All improvement works will be closely monitored and supervised and will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies and will be carried out in accordance with the CEMP.
- Horizontal movement monitoring of the sheet piles will be implemented during construction activities to ensure that movement does not exceed the design limitations. Appropriate remedial actions will be implemented should there be any exceedance of design limitations.

10.2.6 Cable Route General Measures

- Any groundwater or rainwater that collects in a trench will be pumped to locations agreed with the landowners and local authorities. Typically, this will be onto adjacent land, not directly into waterways, and through a filter medium, to avoid the build-up of silt, as some granular material will, inevitably, be pumped out with the water. The pump flowrates will match that of the water into the trench, as it must be kept generally free of water. A single pump with a 75mm hose will usually be adequate to deal with rainwater running into a trench. A similar arrangement will apply at joint bays, where a sump will be cast into the concrete base for a pump
- Any bentonite (or similar HDD drilling head lubrication material) will be handled and removed by the drilling contractor. Typically, bentonite is used, which comprises 95% water and 5% bentonite clay which is a non-toxic, natural substance. HDD will be a closed system, with drilling fluid recirculated, the drill cuttings recovered, and drilling fluid reused;
- In order to eliminate the migration of drilling fluids through the subsurface to waterbodies the following measures will be employed:
- Drilling pressures will be closely monitored and not exceed those needed to penetrate the formation.
- Exit and entry points for the HDD will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies.
- If pressure drops during drilling or if there is a lack of returns the drilling will stop immediately to allow an assessment of a potential leakage of drilling fluid into the surrounding formation. A leak stopping compound may be used to prevent the leak from migrating further into the formation. If the leak stopping compound is not successful, the drilling direction may need to change to avoid the area where the leak occurred.
- If damming and over-pumping is adopted for the open cut watercourse crossings the water will be discharged through a filtering medium to limit silt carry over or bed disturbance downstream of the crossing point;
- There will be no tracking of machinery within watercourses other than that related to the temporary works associated with construction of the watercourse crossings for the cable route;
- Silt pollution caused by working in surface water will be minimised or prevented by keeping water out of the works area using appropriate isolation techniques, such as cofferdams, flume pipes and by-pass channels;

- Where short-term over pumping or flume pipes are required, equipment will be sized to accommodate surface water flow that might reasonably be expected over the period in question.
- Dewatering, where required, will incorporate the use of filter media; there will be no direct discharges into the watercourses
- The cables will be installed in ducts, so the only section of trench that will be open is that which is being excavated and in which ducts are being installed. Excavated cable trenches will be backfilled as the works progress, as soon as installation is complete and any cement bound surround material has cured sufficiently.

10.2.7 Substation General Measures

- Any excavations within made ground should follow the criteria outlined in the CEMP. The CEMP will be updated by the *Contractor* prior to the commencement of construction.
- Excavations in made ground will be monitored by an appropriately qualified person to ensure that any localised areas of contamination encountered are identified, segregated and disposed of appropriately and to ensure soils are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations. Any identified localised areas of contamination will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the contaminated material does not cross- contaminate clean soils elsewhere throughout the sites.
- Samples of ground suspected of contamination will be tested for contamination during the detailed investigation and ground excavated from these areas will be disposed of to a suitably licensed or permitted site in accordance with the current Irish waste management legislation.
- Any dewatering in areas of contaminated ground will be designed to minimise the mobilisation of contaminants into the surrounding environment. Where dewatering in such areas is unavoidable the water will be adequately treated prior to discharge.
- Where piling is undertaken, it is recommended that this is completed following the placement of the deeper granular gas drainage layer which will also serve as a piling mat. Following this, the barrier layer and upper drainage layer will be placed around the piles and sealed.
- Piling may also be completed after the GCL barrier and drainage layer has been laid, which will require excavation of material and sealing the GCL around piles.
- The geotechnical design will ensure that any future settlement on site does not lead to a disruption of the integrity of the GCL barrier layer that could lead to water ingress.

10.2.8 General Monitoring Measures – Water Quality

- Visual monitoring will be undertaken as part of the regular site audits during the construction of the proposed development to ensure existing surface water drainage runoff and natural infiltration to ground is not affected by the proposed development.
- A monitoring regime/programme for water quality will be put in place. Turbidity monitoring will be carried out downstream, within 20m of the crossing, while works are underway at the Templerainy, Kilbride River and Johnstown North watercourse crossings to ensure that sediment levels are not significantly elevated above baseline levels.
- The *Contractor* is required to monitor the weather forecasts to inform the programming of earthworks and stockpiling of materials. Particular regard will be given to trench excavations and other works which may be vulnerable to the generation or conveyance of run-off, and for the protection of site personnel, plant and equipment in flood prone areas.

10.2.9 HDD Works – Water Quality Measures

10.2.10 The drilling contractor will develop a location specific HDD frac-out contingency plan, detailing measures to be taken to reduce the risk of bentonite breakout and measures to be taken for the protection of sensitive ecological receptors, should a breakout occur.

10.2.11 A typical procedure for managing a breakout or frac-out on land would include:

- Stop drilling immediately;
- Contain the bentonite by constructing a bund e.g. using sandbags;
- Recover the bentonite from the bund by pumping to a suitable container or back to the entry pit for recycling;
- If necessary, inert and non-toxic lost circulation material (mica) will be pumped into the bore profile, which will swell and plug any fissures;
- The area will be monitored closely to determine if the breakout has been sealed; and
- Check and monitor mud volumes and pressures as the works recommence.

10.2.12 A typical procedure for managing a breakout or frac-out under water would include:

- Stop drilling immediately;
- Pump lost circulation material (mica), which will swell and plug any fissures;
- Check and monitor mud volumes and pressures as the works recommence; and
- Repeat process as necessary until the breakout has been sealed.

10.2.13 Any bentonite will be managed and removed by the specialist drilling contractor on completion of the operation. Water will be brought to site in tankers (to make up drilling fluid) for lubrication of the bore and to provide the requisite volumes of water to the compound. The water used will be non-saline and non-potable water. For each of the two HDD bores and with an average initial demand of around $10m^3$/hr, the total volume of water required is estimated to be up to $450m^3$ per bore, assuming full drilling fluid returns are maintained. On completion of the operation the drill fluid will be disposed of to an appropriately licensed facility.

10.3 Noise

10.3.1 The employment of good construction management practice, as described in **Section 5** herein, will minimise the risk of adverse impacts from the noise and vibration during the construction phase.

10.3.2 Mitigation measures will be employed to ensure that potential noise and vibration impacts at nearby sensitive receptors due to construction activities are minimised. The preferred approach for controlling construction noise is to reduce source levels where possible, but with due regard to practicality.

10.3.3 The most effective means of mitigating construction noise are through use of barriers to reduce the levels of noise reaching noise sensitive human receptors. A site hoarding, if suitably impervious, will attenuate noise from construction activities. Where HDD activities will be taking place 24/7 in close proximity, a hoarding will be erected around work sites.

10.3.4 Further noise mitigation and monitoring measures are detailed in **Section 5.12** above.

10.4 Lighting

10.4.1 Site lighting will typically be provided by tower mounted temporary portable construction floodlights. The floodlights will be cowled and angled downwards to minimise spillage to surrounding properties. Lighting mitigation measures will follow *Bats & Lighting Guidance Notes for: Planners, engineers, architects and developers* (Bat Conservation Ireland, 2010). The following measures will be applied in relation to site lighting:

10.4.2 The following measures will be applied in relation to site lighting:

- Lighting will be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;
- Motion sensor lighting and low energy consumption fittings will be installed to reduce usage and energy consumption; and
- Lighting will be positioned and directed so that it does not to unnecessarily intrude on adjacent ecological receptors and structures used by protected species. The primary area of concern is the potential impact at the Avoca and Templerainy watercourses and its adjacent woodland habitat as well as hedgerows and treelines. There will be no directional lighting focused towards the watercourses or boundary habitats respectively and cowling and focusing lights downwards will minimise light spillage.
- Once commenced, the HDD drilling activities are expected to operate continuously over a 24 hour period until each bore is complete. Consequently, lighting will be provided to provide a safe working area. Directional lighting will be employed to minimise light spill onto adjacent areas and the lighting will be configured to meet health and safety requirements.

10.5 Invasive Species

10.5.1 A number of invasive species control measures have been proposed. Full details on these measures are outlined in the Invasive Species Management Plan provided in Appendix D.

10.5.2 Those involved in the application of herbicides/pesticides will be competent to do so and will have sufficient experience and knowledge in the area of herbicides/pesticides application.

10.5.3 All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area.

10.6 Habitats

10.6.1 The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the 1 March to the 31 August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Where possible, vegetation will be removed outside of the breeding season and in particular, removal during the peak-breeding season (April-June inclusive) will be avoided. This will also minimise the potential disturbance of breeding birds outside of the proposed development site boundary.

10.6.2 To prevent incidental damage by machinery or by the deposition of spoil during site works, hedgerow, tree and scrub vegetation which are located in close proximity to working areas will be clearly marked and fenced off to avoid accidental damage during excavations and site preparation.

10.6.3 Habitats that are damaged and disturbed will be reinstated and landscaped once construction is complete. Disturbed areas will be seeded or planted using appropriate native grass or species native to the areas where necessary. Natural regeneration of vegetation will also occur.

10.6.4 There will be a defined working area which will be fenced off with designated haul routes to prevent inadvertent damage to adjoining habitats.

10.6.5 Any hedgerows, treelines or woodland habitat removed during construction will be replanted using a suitable mix of shallow rooted, native species such as Hawthorn and Blackthorn.

10.6.6 Tree root systems can be damaged during site clearance and groundworks. Materials, especially soil and stones, can prevent air and water circulating to the roots. No materials will be stored within the root protection area/dripline of mature trees. The ECoW will specify appropriate protective fencing where required. Retention of the existing network of woodland/ treelines/ hedgerows, where possible, will provide natural screening and help to maintain biodiversity. Where tree root systems cannot be avoided the trees will be assessed by an arboriculturist to determine if crown reduction or other measures are required.

10.6.7 It is intended that the land along the cable route will be reinstated and returned to its current use post-construction. As not all habitat can be reinstated, biodiversity enhancement planting will be provided at the landfall to ensure that there is no net-loss of habitat as a result of the proposed development. The total biodiversity enhancement area will be 16,000m^2.

10.7 Otters

10.7.1 A detailed pre-construction survey will be carried out no more than 10-12 months prior to the commencement of construction works to confirm the absence of Otter holts within 150m of the proposed development area.

10.7.2 If Otter holts are recorded at that time, the Environmental (Ecological) Clerk of Works (ECoW) will determine the appropriate means of minimising effects i.e. avoidance, moving works, timing of works etc. If required the ecologist will obtain a derogation licence from the NPWS, to facilitate licenced exclusion from the breeding or resting site in accordance with a plan approved by the NPWS.

10.7.3 Any holts found to be present will be subject to monitoring and mitigation as set out in the NRA Guidelines for the Treatment of Otter prior to the Construction of National Road Schemes (2006b). If found to be inactive, exclusion of holts may be carried out during any season. No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, Otter holts. Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence. The prohibited working area associated with Otter holts will be fenced and appropriate signage erected. Where breeding females and cubs are present no evacuation procedures of any kind will be undertaken until after the Otters have left the holt, as determined by the ECoW. Breeding may take place at any season, so activity at a holt must be adjudged on a case by case basis. On occasion, Otter holts may be directly affected by the scheme. To ensure the welfare of Otters, they must be evacuated from any holts present prior to any construction works commencing. The exclusion process, if required, involves the installation of one-way gates on the entrances to the holt and a monitoring period of 21 days to ensure the Otters have left the holt prior to removal.

10.8 Fish

10.8.1 In addition to the water quality measures outlined in **Section 9.2** above, the following mitigation measures will be implemented:

- Works will comply with the IFI's Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016) and IFI will be consulted with regard to any proposed over-pumping at the watercourse crossing.
- Construction activities will be undertaken during daylight hours only. This will ensure that there is potential for undisturbed fish passage at night. The works will be temporary and will not create a significant long-term barrier to fish movement.
- During the construction of the crossing of the Kilbride watercourse IFI will be consulted in relation to protecting fish populations. Measures include only undertaking instream works during the period July to September to avoid interference with the spawning migration and spawning process and to protect juvenile fish emerging from the gravels,
- Prior to temporarily damming the Kilbride Stream, a fish salvage operation will be carried out under the provisions of a licence under Section 14 of the Fisheries (Consolidation) Act 1959. Standard biosecurity protocols will be implemented, and fish will be translocated to similar habitat upstream of the works area. This will be carried out following receipt of a Section 14 licence from Inland Fisheries Ireland and in consultation with Inland Fisheries Ireland.

10.9 Badgers

10.9.1 As a precautionary measure, as Badgers could potentially move into the area prior to the commencement of works, the planning boundary will be surveyed for Badgers no more than 10-12 months prior to the commencement of site works, to confirm the absence of Badgers within the zone of influence of the development. If Badgers are discovered at that time, the mitigation measures outlined in the NRA publication, Guidelines for the Treatment of Badgers Prior to the Construction of a National Road Scheme (NRA, 2006a), are to be followed. If necessary, the following measures will be employed for all construction works where badger issues arise:

- Badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery will be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances. Based on the results of badger surveys to date the construction works within the planning boundary will not take place within these buffer zones.

- During the breeding season (December to June inclusive), no works will be undertaken within 50m of active setts, and no pile driving within 150m of active setts. Based on the results of badger surveys to date, the construction works within the planning boundary will not take place within these buffer zones.

- Where badger setts are likely to be affected, they will be clearly marked and buffer zones for vehicles clearly marked by fencing and signage;

- Works close to badger setts or removal of badgers from a site will only be carried out under the supervision of a qualified ecologist under license from the NPWS.

- Where affected setts do not require destruction, construction works may commence once recommended mitigation measures to address the badger issues as identified by the ECoW and agreed with NPWS, have been complied with. Such mitigation may include hoarding or visual screens.

- In the unlikely event that destruction of a badger sett is required this can only be carried out under licence from the NPWS. In these circumstances, which are highly unlikely to arise, badgers must have an alternative sett within their territory that can be utilised or an alternative artificial sett will be provided.

10.10 Bats

10.10.1 During the site works, general mitigation measures for bats will follow the National Road Authority's '*Guidelines for the Treatment of Bats during the Construction of National Road Schemes'* NRA (2005c) and *'Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 25*' (Kelleher, C. & Marnell, F. (2006)). These documents outline the requirements that will be met in the pre-construction (site clearance) stage to minimise negative effects on roosting bats, or prevent avoidable effects resulting from significant alterations to the immediate landscape.

10.10.2 No bat roosts were recorded within the proposed planning boundary. The *Contractor* will take all required measures to ensure works do not harm individuals by altering working methods or timing to avoid bats, if necessary. The following mitigation measures will be implemented:

- The bat specialist will work with the *Contractor* to ensure that the loss of trees is minimised and that trees earmarked for retention are adequately protected. A preconstruction survey by the bat specialist will be carried out to advise the *Contractor* on minimising tree loss within the cable route corridor.

- Tree-felling will be undertaken in the period September to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken.

- Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and the local NPWS Conservation Ranger will be contacted.

- Tree will be retained where possible and no 'tidying up' of dead wood and spilt limbs on tree specimens will be undertaken unless necessary for health and safety.

- Treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage.

- During construction directional lighting will be employed to minimise light spill onto adjacent areas. If night time works are required for HDD works at the Templerainy Stream and at the M11 there will be no directional lighting focused towards woodland habitat and cowling and focusing lights downwards will be utilised to minimise light spillage.

- If bats are recorded by the bat specialist within any vegetation or structure on site i.e. trees, or walls to be removed or impacted on, no works will proceed without a relevant derogation licence from the NPWS.

- Upon completion external lighting will be installed at the substation. The lighting system will provide directional illumination within the substation to allow personnel to move without risk to health and safety and to prevent light spill.

10.11 Birds

10.11.1 Refer to **Section 10.6.1** above.

10.11.2 Retention of the native treelines, hedgerows and woodland where possible will reduce the loss of breeding and nesting habitat for birds. NRA guidelines on the protection of trees and hedges prior to and during construction will be followed (NRA, 2006).

10.12 Landscape

10.12.1 See **Section 11** below.

11 Landscaping

11.1 General Measures

11.1.1 It is intended that the land along the cable route will be reinstated and returned to its current use post-construction.

11.1.2 The substation site, contractors' compounds and temporary work areas will be managed in an orderly manner with security fencing and hoarding kept in good condition, and vehicular access managed to avoid congestion outside the development site. All vehicular traffic leaving work areas will be clean, and the local road network kept clean.

11.1.3 Where trees and hedgerows are to be removed, tree protection fencing in accordance with BS 5837: 2012 will be installed to protect adjacent trees from construction traffic or activity to ensure their integrity and vitality. Excavated topsoil and subsoil will be stockpiled appropriately, for later backfilling and top-soiling.

11.1.4 Following completion of the civil works, all excavations will be backfilled using stockpiled materials, and ground surfaces prepared for seeding. Treelines and hedgerows removed to facilitate construction will be replanted.

11.1.5 It is intended that the land along the cable route will be reinstated and returned to its current use post-construction. Trees and hedgerows removed to facilitate construction corridors will be replaced with similar species where possible.

11.1.6 At field boundaries along the cable route, boundaries will be replanted with shallow rooting hedgerow species above the underground cable circuits.

11.1.7 At the 220kV substation, the space between the main security fence and the outer fence will be planted with shallow rooting hedge and shrub species.

11.2 Biodiversity Enhancement Planting

11.2.1 As not all habitat can be reinstated, biodiversity enhancement planting will be provided to ensure that there is no net-loss of habitat as a result of the proposed development. The total biodiversity enhancement area will be 16,000m^2, comprising an area of coastal woodland planting provided at the landfall site and comprising native woodland species.

11.2.2 The objective of the planting scheme within the biodiversity enhancement area is to create a semi-natural habitat with a diverse woodland structure. The soil type in this area is alkaline and the natural woodland type on relatively dry, fertile and alkaline ground is Oak-ash-hazel woodland WN2 (Fossit, 2000). This is a relatively uncommon woodland type. Pedunculate Oak (Quercus robur) has been included within the planting scheme with a view to creating this woodland type. However, it is noted that the planting site is coastal and exposed and therefore a more diverse planting scheme has been utilised. It is also noted that due to the problems associated with ash die-back disease, ash has not been included in the planting scheme. The objective of the planting scheme therefore is to develop a native woodland which is loosely based on the Oak-ash-hazel woodland WN2, but which is more diverse and better able to survive the prevailing conditions.

11.2.3 This will be achieved by using a mixture of native species to provide a canopy, subcanopy and ground layer as the woodland matures. Native woodlands with this type of structure are generally of higher value for flora and fauna and as it matures it will become a locally important habitat for flora and fauna. Some open areas will be left unplanted to form small glades as the woodland matures. All trees will be of Irish origin. The planting scheme can be broadly categorised as follows:

- Main woodland planting area with Alder, Blackthorn, Hawthorn, Pendunculate Oak *Quercus robur*, Whitebeam, Hazel, Downey Birch *Betula pubescens*, Holly, Rowan *Sorbus* spp. and Scots Pine *Pinus sylvestris*.
- Perimeter Edge Mix with Alder, Blackthorn, Hawthorn, Wild Privet *Ligustrum vulgare*, Holly, Spindle and Guelder Rose *Viburnum opulus*.

11.2.4 A rabbit proof fence will be provided to protect trees during early establishment. Weed control should not be necessary in Years 1 or 2, however in year 3 some hand weeding may be required. A 5-year aftercare programme will be implemented. Any plants which die, are removed or become seriously damaged or diseased within a period of five years from the completion of the development shall be replaced within the next planting season.

11.2.5 The contractor will be required to include a 24-month defects liability clause for replacement landscaping and any planting that fails to establish or dies will be replaced.

11.2.6 The coastal woodland planting at the landfall site will incorporate stock proof fencing and have a 5 year aftercare programme to ensure proper establishment of the woodland.

12 ARCHAEOLOGICAL PROTECTION

12.1 Archaeological Mitigation

12.1.1 A programme of archaeological testing will be carried out in advance of construction within all greenfield areas of the proposed development. This will be undertaken by an archaeologist under licence and will aim to identify the nature, extent and significance of any archaeological remains that may be present within the project extents. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH).

12.1.2 A programme of underwater archaeological assessment, in the form of wade surveys, will be carried out on each watercourse to be directly impacted by the proposed development. This will be carried out by an archaeologist (or archaeologists) under licence and will aim to identify the nature, extent and significance of any archaeological remains that may be present within the sections of watercourses to be affected. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

13 REFERENCE DOCUMENTATION

CIRIA SP156 Control of water pollution from construction sites – guide to good practice (2002)

CIRIA C532 Control of Water Pollution from Construction Sites. Guidance for consultants and Contractors (2001)

CIRIA C584: Coastal and Marine Environmental Site Guide (2003)

CIRIA C624 Development and Flood Risk – guidance for the construction industry (2004);

CIRIA C648 Control of Water Pollution from Linear Construction Projects - Site Guide (2006)

CIRIA C649 Control of water pollution from linear construction projects - Technical guidance (2006)

CIRIA C741 Environmental good practice on site guide (4th edition) (2015)

CIRIA C744 Coastal and marine environmental site guide (2nd edition) (2015)

CIRIA C750 Groundwater control – design and practice (2016)

CIRIA C762 Environmental Good Practice on Site pocket book (fourth edition) (2015)

CIRIA X263 Brownfield development sites: ground-related risks for buildings (2002) Department of the Environment Heritage and Local Government Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (2006)

Department of the Marine and Natural Resources (1998), Fisheries Guidelines for Local Authority Works. Department of the Marine and Natural Resources, Dublin

Department of Transport, Tourism and Sport Guidelines for Managing Openings in Public Roads (April 2017).

Department of Transport, Tourism and Sport Traffic Signs Manual – Chapter 8 Temporary Traffic Measures and Signs for Roadworks (August 2019)

Department of Marine and Natural Resources (DMNR) (1998), Fisheries Guidelines for Local Authority Works. Department of Marine and Natural Resources, Dublin

Eastern Regional Fisheries Board. (Year Unknown). Fisheries Protection Guidelines. Eastern Regional Fisheries Board, Dublin

Enterprise Ireland, Best Practice Guide BPGCS005 Oil Storage Guidelines

Environment Protection Agency (EPA), http://www.epa.ie/pubs/advice/

EPA Guidance on Soil and Stone By-products in the context of article 27 of the European Communities (Waste Directive) Regulations 2011 (Version 3; June 2019).

Inland Fisheries Ireland (2016) Guidance on Protection of Fisheries during Construction in and adjacent to Water

Kelleher, C. & Marnell, F Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 2' (2006).

Local Government Management Services Board and Department of Transport Guidance for the Control and Management of Traffic at Roadworks – Second Edition (2010)

National Roads Authority Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (2008)

National Roads Authority Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Road Schemes, Revision 1 (2010)

National Roads Authority Guidelines on the Management of Waste from National Road Construction Projects, Revision 1 (2014)

National Roads Authority Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (2005)

National Roads Authority Guidelines for the Treatment of Badgers Prior to the Construction of a National Road Schemes (2006a)

National Roads Authority Guidelines for the Treatment of Bats during to the Construction of National Road Schemes (2008)

National Roads Authority Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes (2006b)

Transport Infrastructure Ireland CC-SPW-00600 Specification for Road Works Series 600 - Earthworks (including Erratum No 1, dated June 2013) (2013)

Transport Infrastructure Ireland GE-ENV-01104 The Management of Invasive Alien Plant Species on National Roads - Standard (2020)

Transport Infrastructure Ireland GE-ENV-01105 The Management of Invasive Alien Plant Species on National Roads - Technical Guidance (2020)

Office of Public Works "Construction, Replacement or Alteration of Bridges and Culverts, 2013".

UK Pollution Prevention Guidelines (PPG):

- GPP 2 (2018): Above ground oil storage tanks
- GPP 4 (2017): Treatment and disposal of wastewater where there is no connection to the public foul sewer
- GPP 5 (2017): Works and maintenance in or near water
- PPG6 (2012): Working at construction and demolition sites
- *GPP08 (2017): Safe Storage and Disposal of Used Oils;*
- GPP 21 (2017): Pollution incident response planning
- PPG 22 (2011): Incident response - dealing with spills
- PPG 26 (2011) Safe storage - drums and intermediate bulk containers

14 CHECKLIST – Required *Contractor's* Information

The information listed in the table below will be provided by the *Contractor* to the *Employer* according to the provisions of the contract, as indicated.

To be updated post-consent in accordance with planning permission

Documents / Information (and updates thereof) required	pre-start of works	during and post construction
Consents, licences and permissions for activities as required by current legislation governing the protection of the environment	Yes	Yes
Completed / Updated **Contacts Sheet**	Yes	Updates
Pollution Prevention Plan	Yes	Updates
Fuel Management Plan	Yes	Updates
Rock Blasting Plan	Yes	Updates
Drainage Maintenance Register		Yes
Weekly Environmental Risk Log		Yes
Geotechnical Risk Register		Yes
Environmental Risk Map	Yes	Updates
Toolbox Talk Schedule	Yes	Updates
Environmental Inspection Schedule	Yes	Updates
SHE risk register, **Risk Assessment** & **Method Statements**	Yes	Yes
Construction **Waste Management Plan** and related information	Yes	Yes
Excavation / Reinstatement records and plans		Yes
Inspection and Audit Reports		Yes
Water monitoring records		Yes
Watercourse Crossing Plan	Yes	Updates
Invasive Species Management Plan	Yes	Updates
Environmental Incident and Emergency Response Plan	Yes	Updates

Note: The above list only relates to requirements of this CEMP and is not exhaustive. As part of the Contract, other information provisions will also be required from the *Contractor*.

Appendix A – Draft Commitments Register

Appendix B-A

Commitments Register

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
Chapter 6, Construction Strategy	General environmental management	The Developer, Sure Partners Limited (SPL), will ensure that the contractor complies with the measures that have been outlined in the EIAR to avoid and/or reduce significant adverse effects that have been identified.		EIAR	CEMP	Pre-Construction; Construction	Employer
Chapter 6 Construction Strategy; Chapter 23 Schedule of Mitigation; EIAR Appendix 6.1 CEMP	General environmental management	A Construction Environmental Management Plan (CEMP) has been prepared for the proposed development. The CEMP sets out the principles and control procedures to manage any likely significant effects on the environment from the construction phase. The contractor(s) will establish detailed construction methodologies upon appointment, and will further develop the CEMP, while ensuring that all proposals comply with the requirements detailed in the CEMP. The implementation of proposed mitigation measures, environmental commitments of the proposed development and the monitoring and supervision of these measures will be managed through the CEMP. It includes measures to control/manage the following: Noise and Dust Emissions; Surface Water and Water Quality Management Measures; Fuel and Oils Management; Traffic Management; Management of Concrete; Ecological Management; Invasive Species Management; Management of Archaeology; Waste Management; Environmental Incident and Emergency Response; Site Environmental Training and Awareness; Monitoring and Auditing; Managing Environmental Incidents and Complaints.		CEMP	CEMP	Pre-Construction; Construction	Employer/ Contractor
Chapter 6 Construction Strategy; EIAR Appendix 6.1 CEMP	General environmental management	A final CEMP will be prepared by the contractor in advance of works commencing and will be submitted to the local authority(s) for approval. Construction method statements will be prepared prior to commencement of construction and incorporated into the CEMP.		CEMP	CEMP	Pre-Construction; Construction	Employer/ Contractor
Chapter 6 Construction Strategy; EIAR Appendix 6.1 CEMP	General environmental management/ Stakeholder Engagement	A Community Liaison Plan has been prepared for the proposed development and will be fully implemented as detailed in the CEMP.		CEMP	CEMP	Pre-Construction; Construction	Employer/ Contractor
Chapter 6, Construction Strategy	General environmental management	The CEMP sets out the principles and control procedures to manage any likely significant effects on the environment from the construction phase. The contractor(s) will establish detailed construction methodologies upon appointment, and will further develop the CEMP, while ensuring that all proposals comply with the requirements detailed in the CEMP.		CEMP	CEMP	Pre-Construction; Construction	Contractor
Chapter 7 Air Quality; Appendix 6.1 CEMP	Dust Management	<u>Mitigation for all sites</u> • A Community Liaison Plan that includes community engagement before work commences on site is included in the Construction Environmental Management Plan (CEMP) (**Appendix 6.1** of **Volume 3**). • Dust mitigation measures are included in the CEMP (**Appendix 6.1** of **Volume 3**). All measures therein will be implemented.		CEMP	CEMP	Pre-Construction; Construction	Employer/ Contractor
Chapter 7 Air Quality; Appendix 6.1 CEMP	Dust Management	<u>Site Management</u> • Record all dust and air quality incidents, complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. • Hold regular liaison meetings with other construction sites within 500m to the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised, refer to **Chapter 21** *Summary of Cumulative Effects*.		CEMP	CEMP	Construction	Contractor
Chapter 7 Air Quality; Appendix 6.1 CEMP	Dust Management	<u>Preparing and maintaining the site</u> • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. • Erect a 2m minimum site hoarding around construction compounds. • Keep site fencing, barriers and scaffolding clean using wet methods. • Cover, seed or fence stockpiles to prevent wind whipping.		CEMP	CEMP	Pre-Construction; Construction	Contractor
Chapter 7 Air Quality; Appendix 6.1 CEMP	Dust Management	<u>Construction Operations</u> • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation. • Use enclosed chutes and conveyors and covered skips		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate • Ensure equipment and spill kits are readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods					
Chapter 7 Air Quality; Appendix 6.1 CEMP	Dust Management	<u>Measures specific to Earthworks</u> • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable • Only remove the cover in small areas during work and not all at once		CEMP	CEMP	Construction	Contractor
Chapter 7 Air Quality; Appendix 6.1 CEMP	Dust Management	<u>Measures specific to Trackout</u> • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Access gates to be located at least 10m from receptors where possible.		CEMP	CEMP	Construction	Contractor
Chapter 7 Air Quality; Chapter 9 Land and Soils; Appendix 6.1 CEMP	Dust & Air Quality Management	<u>Measures specific to Substation Site Remediation</u> • Dust generation and dermal exposure during site construction works will be controlled by appropriate dust control measures e.g. water sprays and appropriate personal protective equipment (PPE). • Where the asphalt layer is removed at the substation site this will occur in a phased basis and will be replaced with granular hardcore as soon as possible to prevent the generation of windblown dust. • There will be a gas drainage layer and ventilation system, incorporated into the substation site remediation works, which will ensure there is no build-up of ground gas (as described in Chapter 9 Land and Soils).		CEMP	CEMP	Construction	Contractor
Chapter 7 Air Quality; Chapter 9 Land and Soils; Appendix 6.1 CEMP Dust Management	Asbestos	<u>Substation</u> Surveys will be undertaken to identify the risk of asbestos on site. Although unlikely, given ground investigations to date, if asbestos is uncovered on site during construction, it will be double-bagged and removed from site by a competent contractor and disposed of in accordance with the relevant procedures and legislation.		CEMP	CEMP	Pre-Construction; Construction	Contractor
Chapter 7 Air Quality; Appendix 6.1 CEMP Dust Management	Dust Monitoring	The following monitoring measures, will be implemented for the construction phase of the proposed development: • The contractor will undertake on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to Wicklow County Council on request. The frequency of the inspections will be increased during site activities with a high potential to produce dust are being carried out. • Dust monitoring will be undertaken at the three nearest sensitive receptors (with agreement from the landowner) to the works during the construction phase. The TA Luft dust deposition limit values of 350 mg/m^2/day applied as a 30-day average.		CEMP	CEMP	Construction	Contractor
Chapter 8 Climate	Carbon	There will be mitigation embedded through the design of the proposed development including the use of low carbon construction materials. This includes the use of less carbon intensive concrete blends (weak-mix concrete) for the cable route. This low carbon approach has been incorporated as a design measure to reduce carbon.		EIAR	Tender Documents	Pre-Contract award	Employer
Chapter 9 Land and Soils; Appendix 6.1 CEMP	Regulatory Compliance	Construction techniques that comply with the requirements of statutory bodies (Wicklow County Council and EPA) in terms of noise, vibration, soil and groundwater contamination and disposal of contaminated material for both soil and rock cuttings will be adopted.		CEMP	CEMP	Pre-construction; Construction	Employer/ Contractor
Chapter 9 Land and Soils; Chapter 10 Water; Appendix 6.1 CEMP	Ground Contamination	Good housekeeping (daily site clean-ups, use of disposal bins, etc.) will be carried out on site during construction, and the proper use, storage and disposal of all substances and their containers will help prevent soil contamination. For all activities involving the use of potential pollutants or hazardous materials, there will be a requirement to ensure that the material such as concrete, fuels, lubricants and hydraulic fluids will be carefully handled and stored to avoid spillages. Potential pollutants will also be adequately secured against vandalism and will be provided with proper containment according to codes of best practice. Any spillages will		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		be immediately contained, and contaminated soil removed from site and disposed of in a licensed waste facility.					
Chapter 9 Land and Soils; Appendix 6.1 CEMP	Ground Contamination	Excavations in made ground will be monitored by an appropriately qualified person to ensure that any hotspots of contamination encountered are identified, segregated and disposed of appropriately. Any identified hotspots will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the hotspot does not cross- contaminate clean soils elsewhere throughout the site.		CEMP	CEMP	Construction	Employer/ Contractor
Chapter 9 Land and Soils; Chapter 12 Biodiversity, Appendix 6.1 CEMP	Ground Contamination	Potential soil and water pollution will be minimised by the implementation of good construction practices. Such practices will include adequate bunding for oil containers, wheel wash and dust suppression on site roads, and regular plant maintenance. The Construction Industry Research and Information Association (CIRIA) provides guidance on the control and management of water pollution from construction sites in their publication *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors* (Masters-Williams et al, 2001). An Environmental Incident and Emergency Response Plan has been prepared and will be further developed by the appointed contractor prior to the commencement of works and regularly updated, identifying the actions to be taken in the event of a pollution incident. The Environmental Incident and Emergency Response Plan will address the following: • Containment measures; • Emergency discharge routes; • List of appropriate equipment and clean-up materials; • Maintenance schedule for equipment; • Details of trained staff, location and provision for 24-hour cover; • Details of staff responsibilities; • Notification procedures to inform the relevant environmental protection authority; • Audit and review schedule; • Telephone numbers of statutory water undertakers and local water company; and • List of specialist pollution clean-up companies and their telephone numbers.		CEMP	CEMP	Construction	Contractor
Chapter 9 Land and Soils; Chapter 12 Biodiversity, Appendix 6.1 CEMP	Loss or damage of topsoil	Excavated topsoils will be stockpiled using appropriate methods to minimise the effects of weathering. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development, will be reused for other projects where possible, subject to appropriate approvals/notifications or removed off site to a suitable licensed facility. In order to reduce the compaction and erosion of topsoil outside the areas of direct construction, haul routes will be along predetermined routes within the proposed development and deliveries will be along predetermined routes outside the proposed development. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practical, compaction of any soil or subsoil which is not part of the works or to remain in-situ within the proposed development will be avoided. The Contractor will ensure that any topsoil or subsoil is assessed for re-use within the proposed development ensuring the appropriate handling, processing and segregation of the material. Where practical the removal of soil from the proposed development will be avoided. All earthworks will be undertaken in accordance with TII Specification for Road Works (SPW) Series 600 Earthworks and project specific earthworks specifications ensuring that all excavated material and imported material is classified using the same methodology so as to allow maximum opportunity for the reuse of materials on site.		CEMP	CEMP	Construction	Contractor
Chapter 9 Land and Soils; Chapter 12 Biodiversity; Appendix 6.1 CEMP	Excavations in made ground	Any excavations within made ground should follow the criteria outlined in the CEMP. The CEMP will be updated by the contractor prior to the commencement of construction. Excavations in made ground will be monitored by an appropriately qualified person to ensure that any localised areas of contamination encountered are identified, segregated and disposed of appropriately and to ensure soils are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations. Any identified localised areas of contamination will be segregated and		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the contaminated material does not cross- contaminate clean soils elsewhere throughout the site. Samples of ground suspected of contamination will be tested for contamination during the detailed investigation and ground excavated from these areas will be disposed of to a suitably licensed or permitted site in accordance with the current Irish waste management legislation. Any dewatering in areas of contaminated ground will be designed to minimise the mobilisation of contaminants into the surrounding environment. Where dewatering in such areas is unavoidable the water will be adequately treated prior to discharge. Where piling is undertaken, it will be completed following the placement of the deeper granular gas drainage layer which will also serve as a piling mat. Following this, the barrier layer and upper drainage layer will be placed around the piles and sealed. Piling may also be completed after the GCL barrier and drainage layer has been laid, which will require excavation of material and sealing the GCL around piles. The geotechnical design will ensure that any future settlement on site does not lead to a disruption of the integrity of the GCL barrier layer that could lead to water ingress.					
Chapter 9 Land and Soils; Chapter 12 Biodiversity; Appendix 6.1 CEMP	Loss of Solid Geology	All excavated material, where possible will be reused within the proposed development. The appointed contractor will ensure acceptability of the material for reuse for the proposed development with appropriate handling, processing and segregation of the material in accordance with the CEMP. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to earthworks specifications. Care will be taken in reworking this material to minimise dust generation, groundwater infiltration and generation of runoff. Any surplus suitable material excavated that is not required elsewhere for the proposed development, will be used for other projects where possible, subject to appropriate approvals/notifications.		CEMP	CEMP	Construction	Contractor
Chapter 9 Land and Soils; Chapter 12 Biodiversity; Appendix 6.1 CEMP	Earthworks haulage	Earthworks haulage will be along predetermined routes within the proposed development and any deliveries to site will be along existing national, regional and local routes for importation and exportation of materials, in accordance with the Construction Traffic Management Plan (CTMP) included in the CEMP. Haulage along the cable route will be along internal haul roads/access tracks, where practicable. Where compaction occurs due to truck movements and other construction activities on unfinished surfaces, remediation works will be undertaken to reinstate the ground to its original condition. Where practicable, compaction of any soil or subsoil which is to remain in situ along the sites will be avoided. Earthworks operations shall be carried out such that surfaces will be designed with adequate falls, profiling and drainage to promote safe runoff and prevent ponding and flooding. Runoff will be controlled through erosion and sediment control structures appropriate to minimise the water effects. Care will be taken to ensure that surfaces are stable to minimise erosion.		CEMP	CEMP	Construction	Contractor
Chapter 9 Land and Soils; Appendix 6.1 CEMP	Effects on the surrounding ground	Monitoring of ground settlement, horizontal movement will be implemented during construction activities where required to ensure that the construction does not exceed the design limitations. Foundation type and method of construction have been selected to control ground settlement. The foundation types are described in Sections 6.5.4 and 6.5.5 within Chapter 6 Construction Strategy of the EIAR.		CEMP	CEMP	Construction	Contractor
Chapter 9 Land and Soils; Chapter 12, Biodiversity; Appendix 6.1 CEMP	Improvement works for flood defences	All improvement works will be appropriately monitored and supervised and will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies and will be carried out in accordance with the CEMP. Horizontal movement monitoring of the sheet piles (if used) will be implemented during construction activities to ensure that movement does not exceed the design limitations. Appropriate remedial actions will be implemented should there be any exceedance of design limitations.		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
Chapter 9 Land and Soils; Appendix 6.1 CEMP	Pollution of soil and groundwater	The CEMP will be updated by the contractor prior to the commencement of construction. Good construction management practices will be employed to minimise the risk of transmission of hazardous materials as well as pollution of adjacent watercourses and groundwater. The construction management of the site will take account of the recommendations of the CIRIA guidance Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al., 2001) to minimise as far as possible the risk of soil, groundwater and surface water contamination. Measures to be implemented to minimise the risk of spills and contamination of soils and waters will include: • Employing only competent and experienced workforce, and site specific training of site managers, foremen and workforce, including all subcontractors, in pollution risks and preventative measures; • Ensure that all areas where liquids (including fuel) are stored, or cleaning is carried out, are in designated impermeable areas that are isolated from the surrounding area and within a secondary containment system, e.g. by a roll-over bund, raised kerb, ramps or stepped access; • The location of any fuel storage facilities will be considered in the design of all construction compounds and will be fully bunded. These are to be designed in accordance with relevant and current guidelines and codes of best practice at the time of construction. • Good housekeeping will be maintained at the site (daily site clean-ups, use of disposal bins, etc.) during the entire construction phase; • All concrete mixing and batching activities will be located in designated areas away from watercourses and drains; • Potential pollutants will be adequately secured against vandalism in containers in a dedicated secured area; • Provision of proper containment of potential pollutants according to relevant and current codes of practice and legal requirements; • Thorough control during the entire construction stage to ensure that any spillage is identified at early stage and subsequently effectively contained and managed; and • Spill kits to be provided and to be kept close to the HDD and temporary construction compounds. Staff to be trained on how to use spill kits correctly.		CEMP	CEMP	Pre-construction; Construction	Contractor

Chapter 9 Land and Soils; Appendix 6.1 CEMP	Landfall and Cable Route – specific measures	• Any groundwater or rainwater that collects in the HDD drilling pit or in a trench will be pumped away onto adjacent land, not directly into waterways, and through a filter medium in the mud recycling plant;
		• Any bentonite (or similar HDD drilling head lubrication material) will be handled and removed by the drilling contractor. Typically, bentonite is used, which comprises 95% water and 5% bentonite clay which is a non-toxic, natural substance. HDD will be a closed system, with drilling fluid recirculated, the drill cuttings recovered, and drilling fluid reused;
		• In order to minmise the likely migration of drilling fluids through the subsurface to waterbodies the following measures will be employed:
		  ◦ Exit and entry points for the HDD will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies.
		  ◦ If pressure drops during drilling or if there is a lack of returns the drilling will stop immediately to allow an assessment of a potential leakage of drilling fluid into the surrounding formation. A leak stopping compound may be used to prevent the leak from migrating further into the formation. If the leak stopping compound is not successful, the drilling direction may need to change to avoid the area where the leak occurred.
		• If damming and over-pumping is adopted for the open cut watercourse crossings the water will be discharged through a filtering medium to limit silt carry over or bed disturbance downstream of the crossing point;
				CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• There will be no tracking of machinery within watercourses other than that related to the temporary works associated with construction of the watercourse crossings for the cable route; • Where short-term over pumping or flume pipes are required, equipment will be sized to accommodate surface water flow that might reasonably be expected over the period in question; An Environmental Incident & Emergency Response Plan has been developed and is included in the CEMP, which will be further developed by the appointed contractor prior to the commencement of works and regularly updated. This identifies the actions to be taken in the event of a pollution incident. The CEMP addresses, among other aspects, spoil management, containment measures, emergency discharge routes, a list of appropriate equipment and clean-up materials and notification procedures to inform the relevant environmental protection authority.					
Chapter 9 Land and Soils; Chapter 12, Biodiversity; Appendix 6.1 CEMP	Monitoring during construction	Excavations in made ground will be monitored by an appropriately qualified person to ensure that any contaminated material is identified, segregated and disposed of appropriately. Any material from identified hotspot locations shall be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the hotspot does not cross-contaminate clean soils elsewhere. All excavations will be monitored in accordance with good practice and guidelines at the time of the works. Any excavation and stockpiled material shall be monitored during earthworks to ensure the stability of slopes and to ensure that the soils excavated for disposal are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations. Ground settlement, horizontal movement and vibration monitoring will be implemented during construction activities to ensure that the construction does not exceed the design limitations. Movement monitoring shall be carried out during any activities which may result in ground movements or movements of any nearby structures. Visual monitoring will be undertaken as part of the regular site audits during the construction of the proposed development to ensure existing surface water drainage runoff and natural infiltration to ground is not affected by the proposed development. Implementation of the CEMP will be monitored on an ongoing basis.		CEMP	CEMP	Construction	Employer/ Contractor
Chapter 9 Land and Soils; Appendix 6.1 CEMP	Monitoring during operation	Emergency procedures detailing the measures to be undertaken should any accidental spill happen during operation will be developed as part of the operations manual for the proposed development.		EIAR	Operational Procedures	Operation	Employer
Chapter 10 Water; Appendix 6.1 CEMP	Good Practice	The employment of good construction management practices will minimise the risk of adverse impacts on the hydrological regime, water quality and flood risk. As part of the assessment of the required construction mitigation, good practice construction measures which will be implemented for the proposed development were considered.		CEMP	CEMP	Construction	Contractor
Chapter 10, Water; Chapter 12 Biodiversity, Appendix 6.1 CEMP	General Measures	The following general measures are proposed: • No materials will be stored in flood plains or in areas which would impede flood flow paths; • Where possible, soil excavation will not be completed during periods of prolonged or heavy rain; • Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding; All construction compounds will be in areas that are at low risk of flooding (outside the 1 in 100-year flood zone); • Secure oil and chemical storage in over-ground bunded areas, limited to the minimum volume required to serve immediate needs with specified delivery and refuelling areas; • Emergency spill kits retained onsite at sensitive locations; • Cessation of work and development of measures to contain and/or remove pollutant should an incident be identified; • Silt traps will be employed and maintained in appropriate locations;		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Temporary interception bunds and drainage ditches will be constructed up slope of excavations to minimise surface runoff ingress and in advance of excavation activities; • Weather warnings will be monitored during construction to ensure that there is no flood risk to construction workers installing the cable ducts. A risk assessment will be carried out in the case of a weather warning to determine what works can proceed, and what works need to be postponed; and • The temporary foul drainage at the construction compounds will comprise self-contained sanitary facilities, with wastewater stored and tankered off-site to appropriately licensed treatment facilities.					
Chapter 10, Water; Appendix 6.1 CEMP	Landfall	If field drains at the landfall are temporarily diverted, facilities will be put in place to over pump the water into a settlement pond to limit silt discharge into the field drain downstream.		CEMP	CEMP	Construction	Contractor

Chapter 10, Water; Chapter 12, Biodiversity; Appendix 6.1 CEMP	Cable Route - HDD	The following measures are proposed:
		• Any groundwater or rainwater that collects in the HDD drilling pit or in a trench will be pumped away onto adjacent land, not directly into waterways;
		• Any bentonite (or similar HDD drilling head lubrication material) will be handled and removed by the drilling contractor. Typically, bentonite is used, which comprises 95% water and 5% bentonite clay which is a non-toxic, natural substance. HDD will be a closed system, with drilling fluid recirculated, the drill cuttings recovered, and drilling fluid reused;
		• In order to eliminate the migration of drilling fluids through the subsurface to waterbodies the following measures will be employed:
		  • Drilling pressures will be closely monitored and not exceed those needed to penetrate the formation.
		  • Exit and entry points for the HDD will be enclosed by silt barriers (e.g. straw or silt fence) to prevent any runoff into surface water bodies.
		  • If pressure drops during drilling or if there is a lack of returns the drilling will stop immediately to allow an assessment of a potential leakage of drilling fluid into the surrounding formation. A leak stopping compound, such as mica, may be used to prevent the leak from migrating further into the formation. If the leak stopping compound is not successful, the drilling direction may need to change to avoid the area where the leak occurred.
				CEMP	CEMP	Construction	Contractor

Chapter 10, Water; Chapter 12 Biodiversity; Appendix 6.1 CEMP	Cable Route - General	The following measures are proposed: • If damming and over-pumping is adopted for the open cut watercourse crossings the water will be discharged through a filtering medium to limit silt carry over or bed disturbance downstream of the crossing point; • There will be no tracking of machinery within watercourses other than the stream bed excavation for the temporary works associated with construction of the watercourse crossings for the cable route; • Silt pollution caused by working in surface water will be minimised or prevented by keeping water out of the works area using appropriate isolation techniques, such as cofferdams, flume pipes and by-pass channels; • Where short-term over pumping, culverts or flume pipes are required, equipment will be sized to accommodate surface water flow that might reasonably be expected over the period in question; • During the construction of the crossing of the Kilbride watercourse Inland Fisheries Ireland (IFI) will be consulted in relation to protecting fish populations. Measures include only undertaking instream works during the period July to September in the Kilbride watercourse to avoid interference with the spawning migration and spawning process and to protect juvenile fish emerging from the gravels.		CEMP	CEMP	Construction	Contractor
Chapter 10, Water; Chapter 12, Biodiversity; Appendix 6.1 CEMP	Monitoring	Visual monitoring will be undertaken as part of the regular site audits during the construction of the proposed development to ensure existing surface water drainage runoff and natural infiltration to ground is not affected by the proposed development. A monitoring regime/programme for water quality will be put in place. Turbidity monitoring will be carried out downstream, within 20m of the crossing, while works are underway at the Templerainy, Kilbride River and		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		Johnstown North watercourse crossings to ensure that sediment levels are not significantly elevated above baseline levels. The contractor is required to monitor the weather forecasts to inform the programming of earthworks and stockpiling of materials. Particular regard will be given to trench excavations and other works which may be vulnerable to the generation or conveyance of run-off, and for the protection of site personnel, plant and equipment in flood prone areas.					
Chapter 10, Water; Appendix 6.1 CEMP	Operation - Drainage	The following mitigation measures will be implemented during the operational phase: • Appropriately sized hydrocarbon interceptors will be installed at strategic locations along the proposed surface water drainage network to prevent any hydrocarbons from leaving the site of the proposed substation. • Emergency procedures detailing the measures to be undertaken should any accidental spill happen during operation will be developed as part of the operations manual. • An automated remote monitoring system will be put in place on the proposed attenuation pumping system to monitor on-site infrastructure in an extreme rainfall event. Where this monitoring system notifies an issue appropriate measures will be adopted based on the circumstances.		EIAR	Operations Manual	Operation	Employer
Chapter 10, Water; Appendix 6.1 CEMP	Operation – Flood Defences	The existing flood defences will be inspected annually for signs of disrepair, together with additional inspections after significant flood events (Events with a return period greater than a 1 in 2 year flood event). Maintenance of embankments includes removal of vegetation to allow for inspection of the embankment. The maintenance programme for the drainage system will be set out in the Operation and Maintenance manual which will be prepared during the detailed design. Regular maintenance will consist of regular inspections, silt or oil removal if required more frequently than once per year, vegetation management, sweeping of surfaces, and litter and debris removal.		EIAR	Operations Manual	Operation	Employer
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	General	Good industry standards, guidance and practice procedures will be followed in order to minimise noise and vibration effects during construction.		CEMP	CEMP	Construction	Contractor
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	General, Community Liaison	Prior to construction works being undertaken, liaison will be undertaken with occupiers of properties that may be adversely affected by construction noise and vibration. Providing information on the timing and durations of construction works at night and why they are required to be undertaken at night can reduce adverse effects. All communications will contain contact details to direct any questions or complaints to.		CEMP	CEMP	Pre-Construction, Construction	Employer/ Contractor
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	Noise & Vibration Mitigation Measures - Construction	The following provisions, although not exhaustive, will be adhered to where practicable throughout the construction programme: • Vehicles and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, maintained in good and efficient working order, and operated in such a manner as to minimise noise emissions. The contractor will ensure that all plant complies with the relevant statutory requirements; • Machines in intermittent use will be shut down or throttled down to a minimum when not in use; • Compressors will be fitted with properly lined and sealed acoustic covers which will be kept closed whenever in use. Pneumatic percussive tools will be fitted with mufflers or silencers; • Equipment which breaks concrete, brickwork or masonry by bending, bursting or “nibbling” will be used in preference to percussive tools. Where possible, the use of impact tools will be avoided where the site is close to occupied premises; • Rotary drills and bursters activated by hydraulic, chemical, or electrical power will be used for excavating hard or extrusive material; • Wherever possible, equipment powered by mains electricity will be used in preference to equipment powered by internal combustion engine or locally generated electricity; • No part of the works nor any maintenance of plant will be carried out in such a manner as to cause unnecessary noise except in the case of an emergency when the work is absolutely necessary for the saving of life or property or the safety of the works;		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Plant will be maintained in good working order so that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum; and • Noise emitting machinery which is required to run continuously will be housed in a suitable acoustically lined enclosure.					
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	Noise & Vibration Monitoring Measures - Construction	Monitoring of noise and vibration levels at the construction site boundary will be undertaken to identify where work procedures need to be modified. In the event of a valid complaint a noise monitoring protocol will be submitted to Wicklow County Council prior to commencement of any noise monitoring. The protocol will include details of: • A description of the complaint; • Construction activities taking place at the time of the complaint; • Noise monitoring methodology and results; and • Any actions taken.		CEMP	CEMP	Construction	Contractor
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	Noise & Vibration Mitigation - Operation	To address cumulative noise effects with the Crag Digital Avoca Ltd Data Centre permitted application (ref. 18940), noise mitigation is required as part of the onshore 220kV substation. A proposed reduction of sound power levels for the harmonic filters and the 33kV STATCOM reactors (e.g. selection of quieter plant; enclosures; louvres; sound shields, reactor top hats; dynamic vibration absorbers; or active noise cancelling) will be employed by the manufacturer as part of the onshore 220kV substation detailed design so as to avoid cumulative noise levels exceeding the NG4 criteria at surrounding receptors.		EIAR	Tender Documentation	Pre-contract award	Employer
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	Noise & Vibration Mitigation - Operation	Noise generated from the operational substation site will be periodically reviewed. This will include the following: • Examination of noise sources on site; • Examination of noise propagation factors; • Operational noise monitoring; and • Review of any complaints.		EIAR	Operational Procedures	Operation	Employer
Chapter 11, Noise & Vibration, Appendix 6.1 CEMP	Noise & Vibration Mitigation - Operation	It is proposed that operational noise emissions due to the proposed development are subject to a planning condition that covers the most onerous cumulative assessment. As the predicted noise levels in Table 11.20 of the EIAR do not exceed 38 dB LAr,Tr at surrounding residential properties, suggested wording for the planning condition is provided as follows: • *"The rated noise level due to the Proposed Development, shall not exceed 38 dB LAr,Tr at any existing residential Noise Sensitive Locations (NSL)."*		EIAR	Planning Conditions/ Tender Documentation	Pre-contract award	Employer
Chapter 12, Biodiversity; Appendix 6.1 CEMP	General	Mitigation measures (of relevance in respect of any potential ecological effects) will be implemented throughout the project, including the preparation and implementation of detailed method statements. The works will incorporate the relevant elements of the guidelines outlined below: • *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*. National Roads Authority, Dublin (2010). • *Control of water pollution from construction sites. Guidance for consultants and* contractors (C532). CIRIA. H. Masters-Williams et al (2001) • *Control of water pollution from linear construction projects. Technical guidance (C648).* CIRIA. E. Murnane, A. Heap and A. Swain. (2006)		CEMP	CEMP	Construction	Contractor
Chapter 12, Biodiversity; Appendix 6.1 CEMP	General – training an induction	All personnel involved with the proposed development will receive an on-site induction relating to construction and operations and the environmentally sensitive nature of European sites and to re-emphasise the precautions that are required as well as the precautionary measures to be implemented. Site managers, foremen and workforce, including all subcontractors, will be suitably trained in pollution risks and preventative measures. All staff and subcontractors have the responsibility to: • Work to agreed plans, methods and procedures to eliminate and minimise environmental impacts, • Understand the importance of avoiding pollution on-site, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental impact; • Respond in the event of an incident to avoid or limit environmental impact;		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Report all incidents immediately to the project manager and the ecological clerk of works (ECOW); • Monitor the workplace for potential environmental risks and alert the site manager if any are observed; and • Co-operate as required, with site inspections.					
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Water Quality	To minimise the potential for elevated silt levels in surface water run-off, the working area used during construction will be clearly outlined prior to the commencement of works and will be kept to the minimum area necessary to effectively complete the works. Vegetation will be retained where possible.		CEMP	CEMP	Construction	Contractor
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Water Quality	A detailed spillage procedure will be put in place and all staff on site will be trained with respect to the relevant procedures to be undertaken in the event of the release of any sediment, hydrocarbons into a watercourse. Spill kits will be maintained on-site and relevant staff will be trained in their effective usage. All site personnel will be trained and aware of the appropriate action in the event of an emergency, such as the spillage of potentially polluting substances. In the event of spillage of any polluting substance and/or pollution of a watercourse, Wicklow County Council, IFI and the NPWS shall be notified.		CEMP	CEMP	Construction	Contractor
Chapter 12, Biodiversity; Chapter 6 Construction Strategy; Appendix 6.1 CEMP	Water Quality – Cable Route	Any groundwater or rainwater that collects in a trench will be pumped to locations agreed with the landowners and local authorities. Typically, this will be onto adjacent land, not directly into waterways, and through a filter medium, to avoid the build-up of silt, as some granular material will, inevitably, be pumped out with the water. The pump flowrates will match that of the water into the trench, as it must be kept generally free of water. A single pump with a 75mm hose will usually be adequate to deal with rainwater running into a trench. A similar arrangement will apply at joint bays, where a sump will be cast into the concrete base for a pump. Dewatering, where required, will incorporate the use of filter media; there will be no direct discharges into the watercourses. The cables will be installed in ducts, so the only section of trench that will be open is that which is being excavated and in which ducts are being installed. Excavated cable trenches will be backfilled as the works progress, as soon as installation is complete and any cement bound surround material has cured sufficiently.		CEMP	CEMP	Construction	Contractor
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Watercourse Crossings	The Kilbride and Johnstown North watercourse crossings will be constructed using open cut trenched techniques. In addition to the general measures described above, the following specific mitigation measures will be implemented for open cut crossings of watercourses: • Works will comply with The IFI's *Guidelines on protection of fisheries during construction works in and adjacent to waters* (IFI, 2016) and IFI will be consulted with regard to any proposed over-pumping at the watercourse crossing. • The open cut methodology will require dams to be put in place. • Appropriate silt control measures such silt barriers (e.g. straw or silt fence) will be employed where required. Once reinstatement of the cable trench is complete, the temporary dams will be removed and over pumping ceased. No haul road is proposed at the watercourse crossing. Plant will utilise existing accesses used by landowners to avoid further works within the watercourse. • Construction activities will be undertaken during daylight hours only. This will ensure that there is potential for undisturbed fish passage at night. The works will be temporary and will not create a significant long-term barrier to fish movement. • Works on the Kilbride Stream will take place during the summer period from July to September inclusive, which is outside the most sensitive time for these species. Due to dryer conditions in the summer period, this will also minimise the risk of ground damage, minimises the potential for silt generation and thus minimise the risk of inadvertent ecological impacts. • Sediment from the stream bed will be stockpiled outside of the flood plain and used to re-create the stream bed.		CEMP	CEMP	Pre-construction; Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Dams will be removed gradually, with silt curtains in place and under ecological supervision to minimise the potential for silt generation. • The banks of the temporary watercourse crossings will be reformed to their original profile in accordance with both the NPWS, IFI and the landowners' requirements. The bed materials which had been removed for construction will be reinstated to the original profile. The temporary flume pipe, packing and sand-bags will be removed once the bed materials and bank profile are reinstated, ensuring the correct sequencing of substrate reinstatement. • Final bank reinstatement may require further measures to stabilise the banks and prevent erosion. Geotextiles may be used in conjunction with seeding of an appropriate grass mix. Heavier solutions such as the importation of locally sourced large stones or rocks may also be used. Bank stabilisation works will be discussed with the NPWS/IFI to ensure that suitable materials and methodologies are being used. Any bank protection, where it is required, will be adequately keyed into both the bed and banks. The materials and methods employed will be in keeping with the surrounding environment and comply with any conditions attached to the planning approval.					
Chapter 12, Biodiversity; Appendix 6.1 CEMP	HDD Works	While the bentonite drilling fluid is non-toxic and can be commonly used in farming practices, if sufficient quantity enters a watercourse it can potentially settle on the bottom, smothering benthic flora and affecting faunal feeding and breeding sites. The drilling contractor will develop a location specific HDD frac-out contingency plan, detailing measures to be taken to reduce the risk of bentonite breakout and measures to be taken for the protection of sensitive ecological receptors, should a breakout occur. A typical procedure for managing a breakout or frac-out on land would include: • Stop drilling immediately; • Contain the bentonite by constructing a bund e.g. using sandbags; • Recover the bentonite from the bund by pumping to a suitable container or back to the entry pit for recycling; • If necessary, inert and non-toxic lost circulation material (mica) will be pumped into the bore profile, which will swell and plug any fissures; • The area will be monitored closely to determine if the breakout has been sealed; and • Check and monitor mud volumes and pressures as the works recommence. A typical procedure for managing a breakout or frac-out under water would include: • Stop drilling immediately; • Pump lost circulation material (mica), which will swell and plug any fissures; • Check and monitor mud volumes and pressures as the works recommence; and • Repeat process as necessary until the breakout has been sealed. Any bentonite will be managed and removed by the specialist drilling contractor on completion of the operation. Water will be brought to site in tankers. (to make up drilling fluid) for lubrication of the bore and to provide the requisite volumes of water to the compound. The water used will be non-saline and non-potable water. For each of the two HDD bores and with an average initial demand of around $10m^3/hr$, the total volume of water required is estimated to be up to $450m^3$ per bore, assuming full drilling fluid returns are maintained. On completion of the operation the drill fluid will be disposed of to an appropriately licensed facility.		CEMP	CEMP	Pre-construction; Construction	Contractor
Chapter 12, Biodiversity; Chapter 11 Noise; Appendix 6.1 CEMP	Biodiversity & Noise	The employment of good construction management practice, as described in Section 5 of the CEMP and in Chapter 11 Noise and Vibration of the EIAR, will minimise the risk of adverse impacts from the noise and vibration during the construction phase.					

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		This section of the CEMP will be updated by the contractor, prior to construction, to include any specific conditions attached to the approval and other specific construction information, but will at a minimum, include the measures described below. Mitigation measures will be employed to ensure that potential noise and vibration impacts at nearby sensitive receptors due to construction activities are minimised. The preferred approach for controlling construction noise is to reduce source levels where possible, but with due regard to practicality. The most effective means of mitigating construction noise are through use of barriers to reduce the levels of noise reaching noise sensitive human receptors. A site hoarding, if suitably impervious, will attenuate noise from construction activities. Where HDD activities will be taking place 24/7 in close proximity, a hoarding will be erected around work sites.					
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Invasive Species	In addition to the possible advance treatment works and pre-construction survey, when the works areas become available to the contractor for fencing and commencement of site clearance, areas identified as requiring specific invasive species treatment will be demarcated and the designated control measures implemented at the earliest possible stage to reduce the risk of spread along the proposed scheme or beyond the land take. There are a number of management options that may be implemented to control and prevent the spread of invasive species. Detail on these measures are outlined in the ISMP (Appendix D of CEMP). It may not be possible to completely eradicate the invasive species before or during the construction phase. For example, if Japanese Knotweed is found at locations where structures are proposed, root barrier membranes may be required to be installed to protect the structures from the plant. The design of these membranes will form part of the detailed design stage. Those involved in the application of herbicides/pesticides will be competent to do so and will have sufficient experience and knowledge in the area of herbicides/pesticides application. All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area. A number of possible invasive species control measures have been proposed. Full details on these measures are outlined in the Invasive Species Management Plan.		CEMP	CEMP (Appendix D ISMP)	Pre-construction; Construction	Contractor
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Habitats	The following biodiversity measures are to be implemented with respect to habitats: • The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the 1 March to the 31 August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Where possible, vegetation will be removed outside of the breeding season and in particular, removal during the peak-breeding season (April-June inclusive) will be avoided. This will also minimise the potential disturbance of breeding birds outside of the proposed development site boundary. • To prevent incidental damage by machinery or by the deposition of spoil during site works, hedgerow, tree and scrub vegetation which are located in close proximity to working areas will be clearly marked and fenced off to avoid accidental damage during excavations and site preparation. • Habitats that are damaged and disturbed will be reinstated and landscaped once construction is complete. Disturbed areas will be seeded or planted using appropriate native grass or species native to the areas where necessary. Natural regeneration of vegetation will also occur. • There will be a defined working area which will be fenced off with designated haul routes to prevent inadvertent damage to adjoining habitats. • Any hedgerows, treelines or woodland habitat removed during construction will be replanted using a suitable mix of shallow rooted, native species such as Hawthorn and Blackthorn. • Tree root systems can be damaged during site clearance and groundworks. Materials, especially soil and stones, can prevent air and water circulating to the roots. No materials will be stored within the root protection area/dripline of mature trees. The ECoW will specify appropriate protective fencing		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		where required. Retention of the existing network of woodland/ treelines/ hedgerows, where possible, will provide natural screening and help to maintain biodiversity. Where tree root systems cannot be avoided the trees will be assessed by an arboriculturist to determine if crown reduction or other measures are required. • It is intended that the land along the cable route will be reinstated and returned to its current use post-construction. As not all habitat can be reinstated, biodiversity enhancement planting will be provided at the landfall to ensure that there is no net-loss of habitat as a result of the proposed development. The total biodiversity enhancement area will be 16,000m^2					
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Otters	No signs of Otter or Otter holts were noted within 150m of the planning boundary, although Otter are known to occur along the Avoca River. This species is also likely to occur along the Templerainy Stream and potentially the Kilbride Stream. A detailed pre-construction survey will be carried out no more than 10-12 months prior to the commencement of construction works to confirm the absence of Otter holts within 150m of the proposed development area. If Otter holts are recorded at that time, the Environmental Clerk of Works (ECoW) will determine the appropriate means of minimising effects i.e. avoidance, moving works, timing of works etc. If required the ecologist will obtain a derogation licence from the NPWS, to facilitate licenced exclusion from the breeding or resting site in accordance with a plan approved by the NPWS. Any holts found to be present will be subject to monitoring and mitigation as set out in the NRA Guidelines for the *Treatment of Otter prior to the Construction of National Road Schemes* (2006b). If found to be inactive, exclusion of holts may be carried out during any season. No wheeled or tracked vehicles (of any kind) will be used within 20m of active, but non-breeding, Otter holts. Light work, such as digging by hand or scrub clearance will also not take place within 15m of such holts, except under licence. The prohibited working area associated with Otter holts will be fenced and appropriate signage erected. Where breeding females and cubs are present no evacuation procedures of any kind will be undertaken until after the Otters have left the holt, as determined by the ECoW. Breeding may take place at any season, so activity at a holt must be adjudged on a case by case basis. On occasion, Otter holts may be directly affected by the scheme. To ensure the welfare of Otters, they must be evacuated from any holts present prior to any construction works commencing. The exclusion process, if required, involves the installation of one-way gates on the entrances to the holt and a monitoring period of 21 days to ensure the Otters have left the holt prior to removal.		CEMP	CEMP	Construction	Contractor
Chapter 12 Biodiversity; Appendix 6.1 CEMP	Fish – Crossing of Kilbride and Johnstown North	The Kilbride and Johnstown North watercourse crossings will be constructed using open cut trenched techniques. The following mitigation measures will be implemented: • Works will comply with the IFI's Guidelines on *Protection of Fisheries During Construction Works in and Adjacent to Waters* (IFI, 2016) and IFI will be consulted with regard to any proposed over-pumping at the watercourse crossing. • Construction activities will be undertaken during daylight hours only. This will ensure that there is potential for undisturbed fish passage at night. The works will be temporary and will not create a significant long-term barrier to fish movement. • During the construction of the crossing of the Kilbride watercourse IFI will be consulted in relation to protecting fish populations. Measures include only undertaking instream works during the period July to September to avoid interference with the spawning migration and spawning process and to protect juvenile fish emerging from the gravels, • Prior to temporarily damming the Kilbride Stream a fish salvage operation will be carried out under the provisions of a Section 14 licence. Standard biosecurity protocols will be implemented, and fish will be translocated to similar habitat upstream of the works area. This will be carried out following receipt of a Section 14 licence from IFI and in consultation with IFI.		CEMP	CEMP	Construction	Contractor
Chapter 12 Biodiversity; Appendix 6.1 CEMP	Badgers	As a precautionary measure, as Badgers could potentially move into the area prior to the commencement of works, the planning boundary will be surveyed for Badgers no more than 10-12 months prior to the commencement of site works, to confirm the absence of Badgers within the zone of influence of the development. If Badgers are discovered at that time, the mitigation measures outlined in the NRA publication,		CEMP	CEMP	Pre-construction; Construction	Employer/ Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		Guidelines for the Treatment of Badgers Prior to the Construction of a National Road Scheme (NRA, 2006a), are to be followed. If necessary, the following measures will be employed for all construction works where badger issues arise: • Badger sett tunnel systems can extend up to c. 20m from sett entrances. Therefore, no heavy machinery will be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances. Based on the results of badger surveys to date the construction works within the planning boundary will not take place within these buffer zones. • During the breeding season (December to June inclusive), no works will be undertaken within 50m of active setts, and no pile driving within 150m of active setts. Based on the results of badger surveys to date, the construction works within the planning boundary will not take place within these buffer zones. • Where badger setts are likely to be affected, they will be clearly marked and buffer zones for vehicles clearly marked by fencing and signage; • Works close to badger setts or removal of badgers from a site will only be carried out under the supervision of a qualified ecologist under license from the NPWS. • Where affected setts do not require destruction, construction works may commence once recommended mitigation measures to address the badger issues as identified by the ECoW and agreed with NPWS, have been complied with. Such mitigation may include hoarding or visual screens. • In the unlikely event that destruction of a badger sett is required this can only be carried out under licence from the NPWS. In these circumstances, which are highly unlikely to arise, badgers must have an alternative sett within their territory that can be utilised or an alternative artificial sett will be provided.					
Chapter 12 Biodiversity; Appendix 6.1 CEMP	Bats	During the site works, general mitigation measures for bats will follow the National Road Authority's '*Guidelines for the Treatment of Bats during the Construction of National Road Schemes'* NRA (2005c) and *'Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 25*' (Kelleher, C. & Marnell, F. (2006)). These documents outline the requirements that will be met in the pre-construction (site clearance) stage to minimise negative effects on roosting bats, or prevent avoidable effects resulting from significant alterations to the immediate landscape. No bat roosts were recorded within the proposed planning boundary. The contractor will take all required measures to ensure works do not harm individuals by altering working methods or timing to avoid bats, if necessary. The following mitigation measures will be implemented: • The bat specialist will work with the contractor to ensure that the loss of trees is minimised and that trees earmarked for retention are adequately protected. A preconstruction survey by the bat specialist will be carried out to advise the contractor on minimising tree loss within the cable route corridor. • Tree-felling will be undertaken in the period Septembe to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken. • Felled trees will not be mulched immediately. Such trees will be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist will be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work will cease and the local NPWS Conservation Ranger will be contacted. • Tree will be retained where possible and no 'tidying up' of dead wood and spilt limbs on tree specimens will be undertaken unless necessary for health and safety. • Treelines outside the proposed development area but adjacent to it and thus at risk, will be clearly marked by a bat specialist to avoid any inadvertent damage. • During construction directional lighting will be employed to minimise light spill onto adjacent areas. If night time works are required for HDD works at the Templerainy Stream and at the M11 there will		CEMP	CEMP	Pre-construction; Construction	Employer/ Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		be no directional lighting focused towards woodland habitat and cowling and focusing lights downwards will be utilised to minimise light spillage. • If bats are recorded by the bat specialist within any vegetation or structure on site i.e. trees, or walls to be removed or impacted on, no works will proceed without a relevant derogation licence from the NPWS. • Upon completion external lighting will be installed at the substation. The lighting system will provide directional illumination within the substation to allow personnel to move without risk to health and safety and to prevent light spill.					
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Birds	The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land, or any such growing in any hedge or ditch from the 1st of March to the 31st of August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Vegetation will only be removed outside of the breeding season. Retention of the native treelines, hedgerows and woodland where possible will reduce the loss of breeding and nesting habitat for birds. NRA guidelines on the protection of trees and hedges prior to and during construction will be followed (NRA, 2006).		CEMP	CEMP	Pre-construction; Construction	Employer/ Contractor
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Biodiversity and Landscape	Where possible the working width will be managed to minimise the removal of trees and hedgerows. The substation site, contractors' compounds and temporary work areas will be managed in an orderly manner with security fencing and hoarding kept in good condition, and vehicular access managed to avoid congestion outside the development site. All vehicular traffic leaving work areas will be clean, and the local road network kept clean. Where trees and hedgerows are to be removed, tree protection fencing in accordance with BS 5837: 2012 will be installed to protect adjacent trees from construction traffic or activity to ensure their integrity and vitality. Excavated topsoil and subsoil will be stockpiled appropriately, for later backfilling and top-soiling. Following completion of the civil works, all excavations will be backfilled using stockpiled materials, and ground surfaces prepared for seeding. Treelines and hedgerows removed to facilitate construction will be replanted. It is intended that the land along the cable route will be reinstated and returned to its current use post-construction. As not all habitat can be reinstated, biodiversity enhancement planting will be provided to ensure that there is no net-loss of habitat as a result of the proposed development. The total biodiversity enhancement area will be 16,000m^2. The objective of the planting scheme within the biodiversity enhancement area is to create a semi-natural habitat with a diverse woodland structure. The soil type in this area is alkaline and the natural woodland type on relatively dry, fertile and alkaline ground is Oak-ash-hazel woodland WN2 (Fossit, 2000). This is a relatively uncommon woodland type. Pedunculate Oak (*Quercus robur*) has been included within the planting scheme with a view to creating this woodland type. However, it is noted that the planting site is coastal and exposed and therefore a more diverse planting scheme has been utilised. It is also noted that due to the problems associated with ash die-back disease, ash has not been included in the planting scheme. The objective of the planting scheme therefore is to develop a native woodland which is loosely based on the Oak-ash-hazel woodland WN2, but which is more diverse and better able to survive the prevailing conditions. This will be achieved by using a mixture of native species to provide a canopy, subcanopy and ground layer as the woodland matures. Native woodlands with this type of structure are generally of higher value for flora and fauna and as it matures it will become a locally important habitat for flora and fauna. Some open areas will be left unplanted to form small glades as the woodland matures. All trees will be of Irish origin. The planting scheme can be broadly categorised as follows:					

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Main woodland planting area with Alder, Blackthorn, Hawthorn, Pendunculate Oak Quercus robur, Whitebeam, Hazel, Downey Birch Betula pubescens, Holly, Rowan Sorbus spp. and Scots Pine Pinus sylvestris. • Perimeter Edge Mix with Alder, Blackthorn, Hawthorn, Wild Privet Ligustrum vulgare, Holly, Spindle and Guelder Rose Viburnum opulus. A rabbit proof fence will be provided to protect trees during early establishment. Weed control should not be necessary in Years 1 or 2, however in year 3 some hand weeding may be required. A 5-year aftercare programme will be implemented. Any plant which die, are removed or become seriously damaged or diseased within a period of five years from the completion of the development shall be replaced within the next planting season.					
Chapter 12, Biodiversity; Appendix 6.1 CEMP	Operation	There will be infrequent visits by personnel to the substation, therefore, foul wastewater generated will be minimal. Foul wastewater will be collected independently from the welfare facilities in both the Transmission 220kV GIS substation building and the Connection 220kV GIS substation building. Foul wastewater will be stored temporarily in respective, appropriately sized, foul wastewater holding tanks and removed from site periodically, by a licensed service provider, to a licensed wastewater treatment facility. A new surface water drainage network has been designed to accommodate the proposed development. The surface water drainage network has been designed to ensure that no flooding or surcharging of the system will occur for all storm events up to and including the 1 in 30 year return period storm event. All buildings and equipment within the site boundary will be protected against flooding for all storm events up to and including the 1 in 200 year return period storm event. The proposed surface water drainage network design includes an allowance for climate change. Appropriately sized hydrocarbon interceptors will be installed at strategic locations along the proposed surface water drainage network to prevent any hydrocarbons from leaving the site of the proposed substation. Should a flood event be forecast to occur it will be required that the substation operator would deploy personnel to the substation to manage on-site infrastructure in the event of a local flood. Emergency procedures detailing the measures to be undertaken should any accidental spill happen during operation will be developed as part of the operations manual. The lighting system will provide directional illumination within the substation to allow personnel to move without risk to health and safety and to prevent light spill. Security lighting will be installed against the building and Glass Reinforced Polymer lighting poles of maximum 6m height will be installed for illuminating the external area within the perimeter fencing. Under normal operating conditions, external lighting would be switched off during the hours of darkness, to avoid creating any unnecessary glare in the night sky. The exception would be for emergency repairs to outdoor equipment, where high-level illumination would be switched on. Motion sensor technology will be used to control lighting at access doors and security gates. Lighting design/locations will be designed to provide minimum lux levels, for security and for safety reasons. The lighting will comply with EirGrid requirements which include for outdoors at ground level horizontal illuminance of not less than 2 lux. Lights will be controlled to automatically switch on at 55 lux and off at 110 lux, with manual override. For emergency lighting a minimum illumination of not less than 30 lux will be provided in all areas to ensure safe movement of personnel, safe access to, and egress from, any part of the substation building.		EIAR	Operational Procedures	Operation	Employer

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
Chapter 12 Biodiversity; Appendix 6.1 CEMP		Ecology and invasive species surveys will be carried out prior to decommissioning and appropriate mitigation will be provided based on up-to-date data and in line with up to date guidelines. The original habitats will be restored and levels of noise, lighting and disturbance will return to levels pre-construction.		EIAR	Decommissioning Plan	Decommissioning	Employer
Chapter 13, Traffic & Transport; Appendix 6.1 CEMP	Construction Traffic Management Plan	A Construction Traffic Management Plan (CTMP) has been prepared and is included in the CEMP. The contractor will update the CTMP prior to commencement of construction, will keep the CTMP updated throughout, will agree the CTMP with Wicklow County Council and An Garda Síochána and will fully implement the CTMP. The CTMP includes the details of the required traffic management measures. It demonstrates how pedestrians, cyclists and motorised vehicles can pass through the area safely where appropriate and that measures are in place which ensure traffic operates in as efficient a manner as possible. The CTMP includes a detailed consultation plan to deal with third party queries from local resident and community groups along the cable route in particular but also in the vicinity of the proposed site compounds. The contractor will appoint a single point of contact to facilitate the communication of the various traffic management plans. The implementation of the CTMP and the co-ordination of works in consultation with Wicklow County Council and local residents, will minimise these impacts.		CEMP	CEMP	Pre-Construction; Construction	Employer/ Contractor
Chapter 13, Traffic & Transport; Appendix 6.1 CEMP	Deliveries to Site	The following measures apply: • Deliveries of materials will be planned and programmed to ensure that the materials are delivered only as they are required at the working areas along the cable route and will avoid peak hours for set-up and removal of equipment; • Works requiring multiple vehicle deliveries, such as concrete pours, will be planned so as to ensure there will be no queuing on the public roadways around the working areas.		CEMP	CEMP	Construction	Contractor
Chapter 13, Traffic & Transport; Appendix 6.1 CEMP	Road/Lane Closures	The following measures apply: • Road closures will be kept to a minimum to avoid disruption to traffic. Each of the road closures will be short in duration and temporary (unlikely to exceed a week with access allowed between working shifts). Where possible, traffic flow will be maintained by use of temporary traffic signals. • For any works related to the cable route that require lane closures the length of lane closure and the required working area will be kept as small as possible.		CEMP	CEMP	Construction	Contractor
Chapter 13, Traffic & Transport; Appendix 6.1 CEMP	Working Areas, Cable Construction Corridor and Construction Compounds	The following measures apply: • All trucks entering and exiting the working areas which are carrying materials which could become windborne will be covered with tarpaulin; • Trucks will not be allowed to park on public roads either outside the working areas or on any of the approach roads leading to the working areas; • All trucks entering the working areas will be restricted to suitable speed limits and will be directed to the relevant area by the site manager, avoiding school areas at drop off and collection times. St Josephs National School is located on the R772 Dublin Road. Bus services and infrastructure along the R772 Dublin Road and the R774 Vale Road in the study area will not be impacted by the proposed development, as no lane closures or traffic diversion will be required along these roads; • Trucks required to wait at the working areas will switch off engines to avoid unnecessary fuel usage and noise; • All trucks exiting the construction compounds will be required to pass through a dry or wet wheel wash. All water from the wheel wash will be collected, treated to remove silt or other contaminants, and removed from site. This will ensure no spread of invasive species from vehicle movements;		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Roads immediately adjacent to the construction compounds will be visually inspected on a daily basis and power swept and washed as and when required; and • Adequate parking will be provided at the substation site, landfall compounds (HDD and temporary construction compounds), the cable route HDD compounds and the substation compound to avoid queuing at the site entrances and prevent disruption to neighbouring businesses and residences. Site entrance gates will be set back from the main road to allow a vehicle to pull in off the road before the gate is opened.					
Chapter 13, Traffic & Transport; Appendix 6.1 CEMP	Monitoring	The effectiveness of the Construction Traffic Management Plan will be continually monitored by the contractor to ensure the effects on traffic flows on the surrounding road network are minimised. The monitoring regime will consider all modes of traffic including pedestrians, cyclists and car parking provision.		CEMP	CEMP	Construction	Contractor
Chapter 14 – Landscape and Visual	Substation	Building elements within the substation are designed as simple forms with metal panel cladding panels that will be finished in a matt dark green/grey colour that will be visually absorbed by the mixed woodland backdrop on the northern valley face. Perimeter security fencing will also be a dark grey/green finish.		EIAR	Substation Contract	Pre-construction	Employer
Chapter 14 – Landscape and Visual (LVIA)	Substation lighting design	Site lighting will be provided using lamp standards up to 6.0m in height and fitted with high cut-off LED luminaires so as to minimise light spill.		EIAR	Substation Contract	Pre-construction	Employer
Chapter 14 – Landscape and Visual (LVIA)	Substation operation	Lighting will typically be switched off during the hours of darkness and will be operated by motion sensors.		EIAR	Substation Contract	Pre-construction; Construction	Employer/ Contractor
Chapter 14 – Landscape and Visual (LVIA)	LVIA	The substation site, temporary construction compounds and temporary work areas will be managed in an orderly manner, with security fencing or hoarding as appropriate kept in good condition, and vehicular access managed to avoid congestion outside the development site. All vehicular traffic leaving work areas will be clean, and the local road network kept clean in accordance with the Construction Environmental Management Plan (CEMP).		EIAR	CEMP	Pre-construction; Construction	Employer/ Contractor
Chapter 14 – Landscape and Visual (LVIA)	LVIA	Where trees and hedgerows are to be removed, tree protection fencing in accordance with BS 5837: 2012 will be installed to protect adjacent trees from construction traffic or activity to ensure their integrity and vitality. Excavated topsoil and subsoil will be stockpiled appropriately for later backfilling and top-soiling.		EIAR	CEMP	Construction	Contractor
Chapter 14 – Landscape and Visual (LVIA)	LVIA	Following completion of the civil works, all excavations will be backfilled using stockpiled materials, and ground surfaces prepared for seeding. Trees and hedgerows removed to facilitate construction corridors will be replaced with similar species where possible. An area of coastal woodland planting will be provided at the landfall site extending to 16,000m^2 and comprising native woodland species of Alder, Blackthorn, Hawthorn, Sessile Oak *Quercus petraea*, Whitebeam, Hazel, Downey Birch *Betula pubescens*, Holly, Rowan *Sorbus spp*. and Scots Pine *Pinus sylvestris*, together with perimeter edge mix of Alder, Blackthorn, Hawthorn, Wild Privet *Ligustrum vulgare*, Holly, Spindle and Guelder Rose *Viburnum opulus*. At field boundaries along the cable route, boundaries will be replanted with shallow rooting hedgerow species above the underground cable circuits. At the 220kV substation, the space between the main security fence and the outer fence will be planted with shallow rooting hedge and shrub species.		EIAR	CEMP	Construction	Contractor
Chapter 14 – Landscape and Visual	LVIA	The contractor will be required to include a 24-month defects liability clause for replacement landscaping and any planting that fails to establish or dies will be replaced.		EIAR	Contract	Pre-construction; Construction	Employer/ Contractor
Chapter 14 – Landscape and Visual	LVIA	Orderly operation and maintenance of the substation site area will ensure the facility remains as built, any defects repaired promptly, and lighting fixtures maintained to ensure minimal light spill.		EIAR		Operation	Employer
Chapter 15 – Archaeology, Architectural and Cultural Heritage; Appendix 6.1 - CEMP	Archaeology	A programme of archaeological testing will be carried out in advance of construction within all greenfield areas of the proposed development. This will be undertaken by an archaeologist under licence and will aim to identify the nature, extent and significance of any archaeological remains that may be present within the project extents. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record and/or archaeological		EIAR	CEMP	Pre- Construction	Employer

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.					
Chapter 15 – Archaeology, Architectural and Cultural Heritage; Appendix 6.1 CEMP	Archaeology	A programme of underwater archaeological assessment, in the form of wade surveys, will be carried out on each watercourse to be directly impacted by the proposed development. This will be carried out by an archaeologist (or archaeologists) under licence and will aim to identify the nature, extent and significance of any archaeological remains that may be present within the sections of watercourses to be affected. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record and/or archaeological monitoring. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.		EIAR	CEMP	Pre-Construction	Employer
Chapter 16 – Resource & Waste Management; Appendix 6.1 CEMP	Construction Waste Plan	Every effort will be made to ensure that significant environmental effects will be prevented or reduced during the construction phase of the proposed development. A Construction Waste Management Plan (CWMP) is included in the CEMP. This plan meets the requirements of the Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects (Department of Environment, Heritage & Local Government, 2006). The contractor will be obliged to further develop, implement and maintain the CWMP during the construction phase. The key principles underlying the plan will be to minimise waste generation and to segregate waste at source. The measures to achieve these aims include: • Where possible recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation. • Office and food waste arising on the construction compounds will be source separated at least into dry mixed recyclables, biodegradable and residual wastes. • Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they contain, including photographs as appropriate. • The site will be maintained to prevent litter and regular litter picking will take place throughout the site. • Material Management: 'Just in time' delivery will be used so far as is reasonably practicable to minimise material wastage. • The Contractor will ensure that the material transported off site will go to an appropriately licensed/permitted facility. • The Contractor will record the quantity in tonnes and types of waste and materials leaving the site. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of. • Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations. • All hazardous waste will be separately stored and labelled, in appropriate lockable containers, prior to removal from site by an appropriate waste collection holder. • Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility.		CEMP	CEMP	Pre-Construction; Construction	Employer/ Contractor
Chapter 16 – Resource & Waste Management; Appendix 6.1 CEMP	Waste Management Measures	The following measures apply: • The contractor will minimise waste disposal so far as is reasonably practicable; • Source segregation: Where possible, metal, timber, glass and other recyclable material will be segregated during construction works and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding, and photographs of wastes to be placed in each container as required, will be used to facilitate segregation. Where waste generation cannot be avoided this will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect; • Supply chain partners: The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;		CEMP	CEMP	Construction	Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Waste Auditing: The Contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase; • Waste fuels/oils will be generated from equipment used on-site during construction and will be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a Contractor who holds the appropriate waste collection permit; • Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavation material cannot be re-used within the proposed works the Contractor will endeavour to send material for re-use as a by-product, recovery or recycling so far as is reasonably practicable. Re-use as a by-product can be done under an Article 27 notification once the established EPA criteria for such re-use are met; • Excavated material will be stored onsite within the planning (red line) boundary prior to re-use; • The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, and which is disposed of; and • The Contractor will ensure that any off-site interim storage or waste management facilities for excavated material have the appropriate waste licences or waste facility permits in place.					
Chapter 16 – Resource & Waste Management; Appendix 6.1 CEMP	Hazardous Waste	Export of hazardous waste from the proposed development outside of the State is subject to a Europe-wide control system founded on EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended. This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended, which makes Dublin City Council responsible for the enforcement of this regulatory system throughout Ireland. In 2019 in Ireland, 580,977 tonnes of hazardous waste was generated and of this 333,195 tonnes was exported for treatment. The above procedures will be applied to any hazardous waste generated during the construction phase. Export of hazardous waste from site outside the state will comply with the procedures set out in this legislation. An estimated 2,000 tonnes of hazardous excavation waste will be generated as part of the proposed development.		CEMP	CEMP	Construction	Contractor
Chapter 16 – Resource & Waste Management; Appendix 6.1 CEMP	Monitoring	Monitoring required as part of the detailed CWMP will be undertaken and recorded by the contractor.		CEMP	CEMP	Construction	Contractor
Chapter 16 – Resource & Waste Management; Appendix 6.1 CEMP	Decommissioning	For the decommissioning phase, a materials management plan will be prepared, which will cover the same topics and be based on the same general principles as the construction phase CWMP, included in the CEMP (Appendix 6.1 of Volume 3), updated to reflect best practice at the time. During the decommissioning phase the contractor will segregate materials at source and ensure that all waste and recoverable materials leaving site will be collected by authorised collectors and delivered to permitted facilities in accordance with the relevant Irish legislation, pertaining at the time.		EIAR	Decommissioning Plan	Decommissioning	Employer
Chapter 17 – Material Assets	Utilities - wastewater	Wastewater will be collected independently from the welfare facilities in each of the transmission and connection compounds within the proposed substation. The wastewater will be stored temporarily in holding tanks and removed from site periodically, by a licensed service provider, to a licensed wastewater treatment facility.		EIAR		Operation	Employer
Chapter 17 – Material Assets	Utilities - wastewater	The temporary construction compounds will store wastewater in holding tanks, which will be emptied on a regular basis (typically bi-weekly) by licensed contractors and disposed of appropriately.		EIAR	CEMP	Construction	Employer/ Contractor
Chapter 6 – Construction Strategy, Chapter 17 – Material Assets	Utilities – surface water	To control surface water runoff from the site during construction, temporary drainage will be installed.		EIAR	CEMP	Construction	Employer/ Contractor
Chapter 17 – Material Assets	Utilities – surface water	Maintenance work on the existing drainage network and attenuation pond may be required. This is expected to include de-siltation of existing channels and the attenuation pond to be used as part of the work and will either		EIAR		Operation	Employer

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		be completed by an excavator or hydro-vac. The silt will be removed from site as required, to an appropriately licensed disposal facility.					
Chapter 17 – Material Assets	Utilities – surface water	Other maintenance work such as water jet cleaning of existing drainage culvert pipes to remove any blockages or debris, replacement of damaged culvert pipes using equivalent size twin walled HDPE or precast concrete pipes and the shoring up of culvert pipe headwalls may also be required.		EIAR		Operation	Employer
Chapter 17 – Material Assets	Utilities – surface water	Any existing field drainage crossing the landfall site will be temporarily diverted or facilities put in place to over-pump to settlement ponds prior to discharge of treated water into the existing surface water drainage system.		EIAR	CEMP	Construction	Contractor
Chapter 17 – Material Assets	Utilities – surface water	Where existing drainage is present along the cable route, whether in open ditch or buried field drains, these will be temporarily diverted, or facilities put in place to over-pump to the temporary surface water drainage system.		EIAR	CEMP	Construction	Contractor
Chapter 17 – Material Assets	Utilities – surface water	Field drains will be reinstated on completion of the works or new drainage installed to match the drainage characteristics of the ground prior to development, to ensure agriculture is not affected. Landowners will be consulted on the proposed drainage provisions prior to any installation.		EIAR	CEMP	Construction	Employer/ Contractor
Chapter 17 – Material Assets	Land Use	For the installation of the cables, the temporary cable construction corridor along the cable route will be fenced-off on a phased basis and this land will not be available for its current use for the duration of the construction phase. Similarly, the construction compounds will be fenced off and the area of the compounds will not be available for their current use for the duration of the construction phase. Apart from the access tracks to the jointing bays, which will be retained as permanent access tracks, the land will be returned to its original condition and use after the works are complete.		EIAR	CEMP	Construction	Employer/ Contractor
Chapter 17 – Material Assets	Utilities – Power supply	Where possible, the working areas will be powered by existing mains supplies, but if not available, via a diesel generator. The mains supply in the area is expected to have adequate capacity for any proposed requirements.		EIAR	Construction Contracts	Construction	Employer/ Contractor
Chapter 17 – Material Assets	Utilities – Potable Water	Potable water will be supplied to the construction compounds from Irish Water mains where available. If a connection is not feasible, the water required in the works areas during the construction period will be transported to site. Water will also be required in these areas for wheel washes and/or for dust control in dry windy weather. Grey water for construction and toilets will be sourced via rainfall collection or transported via tanker to site. Any potable water supplies, affected by the works, will be reinstated as soon as is feasible, or an alternative supply provided on a temporary basis until the permanent supply can be reinstated.		EIAR	Construction Contracts	Construction	Employer/ Contractor
Chapter 17 – Material Assets	Utilities – General	The proposed cable route will cross underground services and utilities. These have been identified through consultation with the utility providers. There is the potential for disruption to these utilities when the cable trench is being excavated. Some utilities may need to be disconnected for a brief period, with the agreement of the utility owner.		EIAR	Construction Contracts	Construction	Employer/ Contractor
Chapter 17 – Material Assets	Utilities – Potable Water Supply	The water demand at the substation will be minimal and will be less than a domestic requirement. Water will be supplied to welfare facilities in the substation via an upgraded Irish Water watermain.		EIAR	IW Connection Agreement	Operation	Employer
Chapter 17 – Material Assets	Utilities - general	The developer will require the contractor to put measures in place to ensure that there are no interruptions to existing services unless this has been agreed in advance with the relevant service provider. Adequate separation distances will be established between the cables and the existing services. Further methods that will be used to mitigate the risk of damage to existing services will be as follows: • Assessing route records for existing assets to understand their depth, location and proximity to the planned cable trenches; • The use of Ground Penetration Radar (GPR), to provide greater confirmation of the locations of existing assets; • The use of trial holes, again to provide greater knowledge on the exact location of existing assets; and • Full liaison with asset owners to discuss and agree clearances and where necessary designs. All works near existing services and utilities will be carried out in ongoing consultation with the relevant utility company or local authority and will follow any requirements or guidelines they may have.		EIAR	Construction Contracts	Pre-construction; Construction	Employer/ Contractor
Chapter 18 Population and	General Measures covered elsewhere	Mitigation for emissions during construction is proposed throughout under measures in Chapter 7 Air Quality, Chapter 8 Climate, Chapter 9 Land and Soils, Chapter 11 Noise and Vibration, Chapter 13 Traffic and		EIAR	CEMP	Pre-construction; Construction	Employer/ Contractor

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
Human Health; CEMP		Transport, Chapter 16 Resource and Waste Management, Chapter 17 Material Assets and Chapter 19 Major Accidents and Disasters. The use of hoarding at the temporary construction compounds and management of the timing and duration of works will, in most cases have the effect of reducing the significance of effects on the population.					

Chapter 18 Population and Human Health; CEMP	Community Liaison/Good Neighbour Policy	The developer recognises the importance of effective community liaison in order to reduce nuisance to residents during the works, to ensure public safety and welfare, and to help ensure the smooth running of construction activities. Important issues in ensuring good relations are:
		• Providing information for the public during the construction phase, (particularly nearby sensitive receptors);
		• Providing the correct points of contact and being responsive; and
		• Ensuring good housekeeping in all aspects of the operations.
		• A 'good neighbour' policy will also be implemented.
		• Key aspects of this policy include:
		  • Early implementation of the policy i.e. from the commencement of construction;
		  • Reduction of nuisance factors;
		  • Maintaining access to neighbouring premises;
		  • Clear and concise information; and
		  • Undertaking timely liaison with stakeholders.
				EIAR	CEMP	Pre-construction; Construction	Employer/ Contractor

Chapter 18 Population and Human Health; CEMP	Community Liaison Plan	With regard to liaison, the contractor will be required to implement the Community Liaison Plan (included in the Construction Environmental Management Plan (CEMP), which includes details of how the local community, road users and affected residents will be notified in advance of the scheduling of major works, any temporary traffic diversions and the progress of the construction works. This plan includes details of the following: • The Developer's 'good neighbour' policy; • Personnel nominated to manage public relations; • A methodology for processing observations, queries and complaints from the general public, relevant authorities, the media and emergency services; and • The strategy for project-wide liaison with all relevant parties. A Community Liaison Officer will be responsible for managing such tasks as the following: • Briefing neighbours on progress and issues as necessary; • Liaison with Wicklow County Council and emergency services as appropriate; • Liaison with local Gardaí, particularly in relation to traffic movements and permits where necessary; and • Contact details for the Community Liaison Officer will be posted on all construction site notice boards and on any other information or correspondence, which may be distributed from time to time.		EIAR	CEMP	Pre-construction; Construction	Contractor
Chapter 18 Population and Human Health; CEMP	General Measures for Population	The selected construction methodologies will help to avoid/minimise negative effects to the surrounding population during the construction phase of the proposed development: • The implementation of a CEMP to minimise effects of construction works on local amenity and on traffic flow • The implementation of the Environmental Incident & Emergency Response Plan to cover foreseeable risks; • Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruptions as outlined in **Chapter 13** *Traffic and Transport* and herein; • Dust emissions will be controlled throughout the construction phase. Further details of dust mitigation measures are outlined in **Chapter 7** *Air Quality* and herein*;*					

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Best practice measures for noise control on construction sites will be adhered to during construction. Further details of noise and vibration mitigation measures are outlined in **Chapter 8** *Noise and Vibration* and herein; • As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues during the construction phase. Further details are provided in **Chapter 6** *Construction Strategy;* • A Construction Traffic Management Plan (CTMP) has been prepared and is included in the CEMP; • Temporary traffic management signage Chapter 8 of the Traffic Signs Manual and Temporary Traffic Management Document Guidelines (Department of Transport, Tourism and Sport, 2019) will be erected which will provide advance warning of site entrances as described in **Chapter 13** *Traffic and Transport*; • Deliveries of materials will be planned and programmed to ensure that the materials are delivered only as they are required at the working areas. • Storage of material will be at the supplier or at the temporary construction compounds, depending on the type of material; • Works requiring multiple vehicle deliveries, such as concrete pours, will be planned so as to ensure there will no queuing on the public roadways around the working areas. Deliveries will, where appropriate, be limited to outside of peak traffic hours					
Chapter 19 – Major Accidents and Disasters, Appendix 6.1 - CEMP	Fire/Explosion Risk	As outlined in the EIAR**,** the scenario with the highest risk score in terms of a major accident and/or disaster during the construction phase was identified as 'fire and/or explosion', with a secondary effect of 'fire water/foam/powder reaching nearby receptors'. The mitigation measures, which will limit the likelihood and consequence of a fire or explosion, will include: • The storage of fuels and oils in contained and bunded areas, with quantities stored being limited to the minimum volume required to meet the immediate requirements. This will mitigate, by prevention, the risk of fire/explosion resulting from the potential spillage of fuels or oils. • Portable fire extinguishers will be available for use at each of the onshore working areas. • Appropriate site personnel will be trained as first aiders and fire marshals. • Monitoring of site activities to minimise fire and explosion risk will be a key part of the duties of the site safety officer and fire marshals.		EIAR	CEMP	Pre-construction; Construction	Employer/ Contractor
Chapter 5 Description of Development, Chapter 6 Construction Strategy, Chapter 19 – Major Accidents and Disasters	Operations	The proposed development will be operated in line with industry good practice as described in **Chapter 5** *Description of Development* and **Chapter 6** *Construction Strategy* including operational management procedures implemented so as to minimise the risk of major accidents occurring.		EIAR		Operations	Employer
Chapter 19 – Major Accidents and Disasters, Appendix 6.1 - CEMP	Fire/Explosion Risk	The scenarios with the highest risk score during the operational phase were a 'fire and/or explosion', with a secondary effect of 'fire suppressant powder reaching nearby receptors.' The mitigation measures, which will limit the likelihood and consequence of a fire or explosion, will include: • The proposed development will comply with BS 9999 Fire safety in the design, management and use of buildings. • A Fire Plan specific to the substation site will detail the pre-planned procedures in place for use in the event of a fire. • Fire detection and alarm will be designed to BS 5839 Fire Detection and Alarm Systems for Buildings • The buildings will be equipped with firefighting equipment that may aide safe evacuation in the event of a fire. • Fire suppression systems will be fitted to all enclosed areas with equipment/plant containing oil unless it can be demonstrated at detailed design stage that it is safe not to do so.		EIAR		Operations	Employer

Planning Condition No.; EIAR Chapter/EIAR Appendix Commitment	Topic	Commitment	Related Planning Condition (PC)	Related Existing (Draft Document)	To be covered in Construction Document	Project Phase	Responsible Party
		• Cable routes and other holes through walls and floors will be designed to be capable of being fire sealed after installation of all equipment/plant and cables. • Smoke detection will be provided throughout the substation building.					

Appendix B – Construction Traffic Management Plan

Appendix B-B

Construction Traffic Management Plan

Contents

1 Introduction

1.1 General

This Construction Traffic Management Plan (CTMP) has been prepared for the Arklow Bank Wind Park Phase 2 Onshore Grid Infrastructure (the proposed development) to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase. The Contractor will update the CTMP prior to commencement of construction, will keep the CTMP updated throughout, will agree the CTMP with Wicklow County Council and An Garda Síochána and will fully implement the CTMP.

1.2 Purpose and Scope

This CTMP will be a key construction contract document, the implementation of which will reduce possible impacts which may occur during the construction of the proposed scheme.

The objectives of this CTMP are to:

- Outline minimum traffic management measures to be implemented at the site access/egress locations and at the approaches to such access/egress locations, during the works;
- Demonstrate to the Developer, Contractor and suppliers the need to adhere to the relevant guidance documentation for such works; and
- Provide the basis for the Contractor to further develop the details of this CTMP.

The Developer or the Employer's Representative will be responsible for ensuring that the Contractor manages the construction activities in accordance with this CTMP.

Objectives and measures are also included for the management, design and construction of the project to control the traffic impacts of construction insofar as it may affect the environment, local residents and the public in the vicinity of the construction works.

In the event that approval is granted for the proposed development, the CTMP will address the requirements of any relevant conditions, including any additional mitigation measures which are conditioned. The CTMP (updated by the Contractor prior to construction to incorporate these conditions) will require approval from Wicklow County Council and An Garda Síochána.

The objective of this CTMP is to ensure that the residual impacts to the public road network during the construction phase of the proposed development are minimised and that transport related activities are carried out as safely as possible and with the minimum disruption to other road users.

The CTMP has also been prepared for the purpose of identifying appropriate and safe methods of access for construction traffic to the proposed development.

This CTMP describes the traffic management for the transportation of construction materials, equipment and personnel along the public road network to facilitate the construction of the proposed development. Light vehicles, such as cars and vans, will be used by site operatives travelling to and from the site. Heavy Goods Vehicles (HGV) will be required to deliver general construction materials, such as concrete, to the site and for the removal of excavated material that is to be disposed of off-site.

1.3 Implementation

Key to the implementation of the CTMP is the is the appointment of a suitably experienced and qualified person on-site (nominated by the Contractor) who will supervise the implementation of the plan and regularly liaise with and update the supervising Employer's Representative team on the operation of the CTMP and any proposed improvements. All site personnel will be charged with following good practice and will be encouraged to provide feedback and suggestions for improvements. Site personnel will also be required to comply with the requirements of the site's CTMP.

1.4 Document Revision

The CTMP will be subject to on-going review throughout the construction phase of the proposed scheme, and regular auditing and site inspections.

All of the information required to further develop the CTMP will be highlighted in the specification for the construction contract. The Contractor will be required to include further details and/or confirmation, as described below.

2 Proposed Construction Traffic Generation

2.1 Overview

The potential temporary impacts of the scheme on the road network are as follows:

- Temporary impacts during construction due to the excavation of materials in order to facilitate construction, and the associated movements of excavation vehicles;
- Temporary impacts associated with the importing of construction materials, equipment, etc to the works areas, and the relevant movements of delivery and construction vehicles and construction workforce;
- Temporary impacts during construction due to road closures, lane closures and diversions;

- Construction staff commuting to and from the construction compounds, cable route corridor and working areas; and
- General service traffic associated with construction activities (i.e. plant deliveries, visitors, traffic between compounds and working areas, etc.)

2.2 Traffic Generation from Proposed Scheme

In the traffic impact assessment, the volumes of traffic associated with the construction activities have been estimated on the basis of the requirements of each individual area of works. All the assumptions made for the purpose of the assessment were conservative and therefore the conclusions are robust.

The time periods assessed as part of this transportation assessment included the busiest periods namely the morning peak period, the evening peak period and also daily flows (i.e. 24-hour period).

The crossing of the M11 will be either via HDD or via an existing underpass. In respect of the M11 crossing, it is considered that, in terms of this transport assessment, the HDD crossing would generate the highest number of vehicle trips due to the amount of excavated material to be removed. The HDD crossing therefore has been used in the traffic impact assessment. Should the option to use the existing underpass materialise then the volume of generated traffic will be less, resulting in a reduced impact.

The duration of construction works at the landfall area will be c. 10 months between September 2023 and June 2024. For the purpose of the assessment it was assumed that the export and import of earthworks will take place over a period of 2 months.

The duration of construction works along the cable route will be c. 24 months commencing in 2023. It was assumed that the export and import of earthworks/fill along the cable route to/from the temporary cable construction compound at the landfall and to/from the substation temporary construction compound will take place over a period of 6 months. It was also assumed that the export and import of earthworks along the cable route to/from the four HDD temporary construction compounds at the R772 and M11 will take place over a period of 1 month.

The duration of construction works at the substation area will be c. 24 months commencing in 2023. For the purpose of the assessment it was assumed that the export and import of earthworks at the substation area will take place over a period of 3 months.

The assessment assumes that the construction of all aspects of the proposed development will take place in parallel, at the same time. It is also assumed that peak construction takes place during summertime where the traffic on the roadways in the study area will be at their busiest.

The maximum projected increase in traffic associated with this likely construction sequence will result in the following increase in traffic flows.

	Daily (Light Vehs)	Daily (HGVs)	Peak Hour (Light Vehs)	Peak Hour (HGVs)
Landfall Area	41	65	9	7
Cable Route (including R772 and M11 HHD construction)	196	221	52	22
Substation Area	103	259	29	26
TOTAL	**340**	**545**	**90**	**54**

Table 7: Construction Traffic Volumes

The construction trip generation takes into account trips generated by the following:

- Earthworks and materials - excavated waste exported, fill materials imported and construction materials delivered, using the public road network, via the construction area;
- Construction equipment being delivered to the construction area;
- Staff commuting to and from the construction area; and
- Service trips associated with the construction area (i.e. compound set up, maintenance, external third party visitors, etc.).

For the purposes of the traffic impact assessment, it is assumed that all externally generated traffic will arrive to and from Junction 20 on the M11 and this is the designated access point from the Motorway to the construction site(s).

For the cable route construction, it is assumed that during construction 100% of the traffic could travel along the R772 Dublin Road and R750 Sea / Coast Road. Alternatively, 100% of the traffic could travel along the R772 Dublin Road, L2180 Beech Road and L6179 Kilbride Road.

Most of the construction site staff will be on site for standard working hours between 07.00-19.00 and will arrive before and depart after these times, although the traffic impact assessment undertaken in respect of the proposed development has assumed that the peak traffic generation associated with the construction activities will coincide with the peak periods on the receiving road network.

2.3 Envisaged Construction Equipment

Construction equipment and vehicles required for each construction element/operation will be delivered to site by appropriate vehicles.

Specific equipment and vehicles which are deemed to be required for the proposed development by the contactor, suppliers and staff are to be confirmed and included in the updated CTMP, prior to the commencement of construction.

3 Matters to be Addressed in More Detail

The Contractor will be required to ensure that the contents of this CTMP are further developed prior to the commencement of works and in accordance with the EIAR. The Contractor will implement monitoring measures to confirm the effectiveness of the mitigation measures outlined in the CTMP.

This following aspects of traffic management during the construction stage are considered in further detail hereunder:

- Site/works area access and egress;
- Traffic management signage;
- Timings of material, plant and equipment deliveries to site;
- Traffic management speed limits;
- Road cleaning;
- Vehicle cleaning;
- Road condition;
- Road closures;
- Enforcement of traffic management plan;
- Emergency procedures during construction; and
- Communication.

These details (see below) will be further developed by the Contractor prior to commencement of construction.

3.1 Site Access and Egress

The proposed site access locations have been identified and the Contractor will provide advanced warning signs, in accordance with the latest current Department of Transport's 'Traffic Signs Manual, Chapter 8: *Temporary Traffic Measures and Signs for Roadworks* , on the approaches to proposed site access locations, a minimum of one week prior to construction works commencing at that location.

Appropriate lines of sight have been identified at each access location, with the exception of R747 Vale Road which has restricted visibility in one direction. This will be managed by the use of banksman and / or temporary traffic management for all vehicles entering / egressing from the working area.

3.1.1 National Road Network

Junction 20 on the M11 national primary route is anticipated to be utilised as the access route for all construction activity during the construction period.

3.1.2 Regional and Local Road Network

The following regional roads will be utilised as delivery routes during the construction period:

Regional Road Network

- R750 Sea / Coast road
- R772 Dublin Road

Local Road Network

- L6197 Kilbride Road
- L2180 Beech Road

No construction traffic will be permitted to use the L95115 during the course of the construction works, however some short-term activity will occur during the construction of the cable crossing this road.

No construction traffic will be permitted to use Love Lane during the course of the construction works.

3.1.3 Construction Compounds and Working Areas

Seven temporary construction compounds have been identified: There will be both a HDD compound and a temporary cable construction compound at the landfall site, at Johnstown North. There will also be a temporary construction compound at the substation site at Shelton Abbey. There will also be four compounds along the cable route, at the HDD crossing locations (M11 and R772 Dublin Road) to accommodate the HDD equipment and accommodate construction staff for the HDD crossing.

In addition, four working areas have been identified to serve specific activities related to the decommissioning of old overhead line towers, the construction of new towers and the flood defence works at the substation area.

3.2 Traffic Management Signage

The Contractor will undertake consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements. Such signage will be installed prior to works commencing on site.

Proposed signage will include warning signs to provide warning to road users of the works access/egress locations and the presence of construction traffic.

All signage will be provided in accordance with the latest current Department of Transport's 'Traffic Signs Manual, Chapter 8: *Temporary Traffic Measures and Signs for Roadworks* .

In summary, the Contractor will ensure that the following elements are implemented:

- Consultation with the relevant authorities for the purpose of identifying and agreeing signage requirements;
- Provision of temporary signage indicating site access route and locations for contractors and associated suppliers; and
- Provision of general information signage to inform road users and local communities of the nature and locations of the works, including project contact details.

3.3 Timings of Material Deliveries to Site

In order to reduce impacts on local communities and residents adjacent to the proposed sites:

- The Contractor will liaise with the management of other construction projects in the area and the local authorities to co-ordinate deliveries;
- The Contractor will schedule deliveries in such a way that construction activities and deliveries activities do not run concurrently, where practicable, e.g. avoiding pouring of concrete on the same day as material deliveries in order to reduce the possibility of numbers of construction delivery vehicles arriving at each site/works area location simultaneously, resulting in build-up of traffic on road network;
- The Contractor will schedule deliveries to and from any proposed temporary construction materials storage yards or compounds such that traffic volumes on the surrounding road network are kept to a minimum;
- A construction phase programme of works will be developed by the Contractor in liaison with Wicklow County Council, specifically taking into account potential road repair works that are included in the agreed local authority's road works schedule;
- HGV deliveries to specific areas of the site will be suspended on the days of any major local events, etc. that have the potential to cause larger than normal traffic volumes in the overlap areas;
- The Contractor will liaise with members of the local community to ensure that construction-related traffic will not conflict with sensitive events such as funerals and to notify of potential delays, e.g. road closures and diversions;
- Specific construction moratoria (for example, certain busy periods) as indicated by Wicklow County Council will be respected and incorporated into the construction phasing programme;
- HGV deliveries will avoid passing schools at opening and closing times where it is reasonably practicable; and

- Construction activities will normally be undertaken during daylight hours for all construction stages. It is expected that the HDD works will operate 24 hours per day, seven days per week. Commissioning and pre-commissioning may also take place 24 hours per day, seven days per week. Any works on public roads outside normal working hours will be subject to consultation with Wicklow County Council and An Garda Síochána.

3.4 Traffic Management Speed Limits

Adherence to posted / legal speed limits will be emphasised to all staff and suppliers and contractors during induction training. Drivers of construction vehicles and HGVs will be advised that vehicular speeds in sensitive locations, such as local community areas, will be restricted to appropriate levels.

Special speed limits will be implemented for construction traffic in sensitive areas such as school locations. Such recommended speed limits will only apply to construction traffic and not to general traffic.

3.5 Road Cleaning

It will be a requirement of the works contract that the Contractor carry out periodic road sweeping/cleaning operations to remove any scheme related dirt and material deposited on the road network by construction / delivery vehicles. Road sweepers will dispose of material following sweeping of road network, to a licensed waste facility.

3.6 Vehicle Cleaning

It will be a requirement of the works contract that the Contractor will provide dry or wet wheel washing facilities where appropriate, and any other necessary measures to remove mud and organic material from vehicles exiting sites or works areas.

3.7 Road Condition

The Contractor will ensure that:

- Prior to mobilisation, a pre-commencement pavement condition survey is carried out along each of the local and regional roads forming part of the access/delivery routes, and a copy of the condition survey report is submitted to Wicklow County Council as a record of the baseline condition of each road.
- Throughout the course of the construction of the proposed scheme, on-going visual inspections and monitoring of the access/delivery routes will be undertaken - to ensure any damage caused by construction traffic is minimised and repaired in a timely manner to minimise disruption to other road users.
- Loads of materials leaving each site will be evaluated, covered and appropriately secured if considered necessary to minimise potential dust impacts during transportation.

- The hauliers will take all reasonable measures while transporting waste or any other materials likely to cause fugitive losses from a vehicle during transportation to and from site, including but not limited to:
    - Covering of all waste or material with suitably secured tarpaulin/ covers to prevent loss; and
    - Utilisation of enclosed units to prevent loss.
- The roads forming part of the delivery routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the delivery routes as required.
- In addition, the Contractor will, in conjunction and through agreement with Wicklow County Council:
    - Undertake additional inspections and reviews of the roads forming the delivery routes prior to the construction phase to record the condition of these roads at that particular time; and
    - Such surveys will comprise, any recording or documentation processes as determined necessary by Wicklow County Council.
- Upon completion of the construction of the proposed scheme, the surveys carried out at pre-construction phase will be repeated and a comparison of the pre and post construction surveys carried out, with the Developer undertaking to make good any damage incurred as a result of the construction works.
- The necessary permit(s) and/or licence(s) will be obtained and in consultation with Wicklow County Council, road damage attributable to works will be rectified, to an appropriate standard.

3.8 Road Closures

3.8.1 During Road Crossings

The construction of the cable route requires the construction of a number of road crossings.

The crossings of the M11, R772 Dublin Road and the R750 Sea / Coast Road will be via HDD methods (although there is an open cut option through an existing underpass for the M11 crossing). As a result, these crossings will not impact on the traffic flows.

However, for the minor roads some road / lane closures will be required. Traffic will be managed at these locations using either stop/ go control (single lane closure) or temporary parallel lanes or localised diversion (full closure). Each of the lane closures will be short in duration. The open cut road crossings will take place at:

- L95115,
- L6179 Kilbride Road, and
- L2180 Beach Road.

To undertake the crossing of a public road, a local temporary traffic management plan will be produced, agreed with the road authority and implemented by the Contractor.

3.8.2 During cable construction along the road

The cable will also run within the following roads for short stretches:

1. Forest Road (if the M11 is crossed via the existing underpass instead of HDD)
2. L6179 Kilbride Road
3. Avoca River Business Park access road

Traffic will be managed at these locations using either stop / go (single lane closure). Localised diversion (full closure) is not recommended in these cases.

3.9 Enforcement of Traffic Management Plan

All project staff and material suppliers will be required to adhere to the CTMP. The Contractor will agree and implement monitoring measures to confirm the effectiveness of the CTMP and compliance will be monitored by the supervising Employer's Representative. Regular inspections / spot checks will also be carried out to ensure that all project staff, material suppliers and hauliers follow the measures specified in the CTMP.

3.10 Emergency Procedures During Construction

The Contractor will ensure that unobstructed access is provided for all emergency vehicles along all routes and site accesses.

The Contractor will provide to Wicklow County Council and the emergency services, the contact details of the Contractor's personnel responsible for construction traffic management.

In the case of an emergency which occurs off site all construction traffic will be notified of the incident and location.

3.11 Communication

The Contractor will ensure that close communication with Wicklow County Council and the emergency services is maintained throughout the construction phase. Such communications will include:

- Submissions of proposed detailed traffic management measures for comment and approval,
- Ongoing reporting relating to the condition of the road network and updates to construction programming,
- Information relating to local and community events that could conflict with proposed traffic management measures and construction traffic in order to implement alternative measures to avoid such conflicts.

The Contractor will also ensure that the local community is informed of proposed traffic management measures in advance of their implementation and in accordance with the Community Liaison Plan (included in the CEMP). Such information will be disseminated by posting advertisements in local newspapers and delivering leaflets to houses in the affected areas. Such information will contain the Contractor's contact information for members of the public to obtain additional information and to provide additional knowledge such as local events, sports fixtures etc. which may conflict with proposed traffic management measures.

4 Conclusions

This CTMP will form part of the construction contract and is designed to reduce possible impacts which may occur during the construction of the proposed development.

The Contractor will update the CTMP prior to commencement of construction, will keep the CTMP updated throughout, will agree the CTMP with Wicklow County Council and An Garda Síochána and will fully implement the CTMP.

The Employer's Representative will be responsible for ensuring that the Contractor manages the construction activities in accordance with this CTMP and will ensure that any conditions of planning are incorporated into the site specific CTMP.

4.1 Monitoring

The implementation of the CTMP will be monitored by the Contractor and Employer's Representative. Regular inspections / spot checks will be carried out to ensure that all project staff, material suppliers and hauliers follow the measures specified in the CTMP.

Appendix C – Construction Waste Management Plan

Appendix B-C

Construction Waste Management Plan

Contents

1 Introduction

This Construction Waste Management Plan (CWMP) has been prepared having regard to the Department of Environment, Heritage & Local Government *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006) and National Roads Authority *Guidelines on the Management of Waste from National Road Construction Projects, Revision 1* (2014).

The Contractor will further develop, implement and maintain the CWMP during the construction phase. The CWMP addresses:

- Waste management
- Waste minimisation
- Tracking and documentation procedures for off-site waste.

1.1 Construction Phase

The key principles underlying the plan are to minimise waste generation and to segregate waste at source, in accordance with the waste hierarchy. Prevention and minimisation are inherent in the design of the proposed development.

1.1.1 Site Clearance and Earthworks

During site clearance, organic waste (such as trees and vegetation) will be removed from site by a waste collection permit holder and delivered to an authorised composting or organic waste facility. The extent of vegetation clearance will not be significant based on site and route selection.

Excavation will be required at the landfall, cable route, substation site and connection to the NETN. The most environmentally sustainable means of managing excavated material is its prevention and minimisation. Excavated material as part of the construction works will generally consist of:

- Rock, at the landfall compound;
- Topsoil and subsoil; and
- Made ground.

A significant proportion of the surplus excavation material from the landfall site and cable route will consist of uncontaminated soil, stone and naturally occurring material which may be reused in its natural state within the site.

Natural ground, where it can be shown to fulfil the requirements of the project Earthworks Specification, will be reused within the site. The excavated material will be tested to ensure compliance with the requirements of Class 1 or Class 2 general fill as defined in Transport Infrastructure Ireland (TII) publication titled ‘Specification for Road Works Series 600 - Earthworks (including Erratum No. 1, dated June 2013)’.

Off-site re-use options for surplus clean and inert excavated material include reuse as a by-product on other construction sites subject to Article 27 notification to the EPA, or recovery at suitable authorised waste facilities i.e. facilities which have been granted a Certificate of Registration, Waste Facility Permit or EPA licensed soil recovery facilities in accordance with the *Waste Management Acts 1996-2016.*

Potential recycling/recovery activities include processing of stone to produce construction aggregate, infilling of quarries, raising land for site improvement or development.

A small volume of soil and bentonite will be generated during HDD activities but this will be minimal (i.e. a few cubic metres of soil plus a small volume of bentonite). Bentonite containing wastes will be removed from site by a waste collector authorised to transport this waste and delivered it to a waste facility authorised to accept it.

Any excavated contaminated material will be removed and disposed of or recovered at a suitably licensed or permitted site in accordance with the current Irish waste management legislation.

The following is a summary of material likely to require removal from site.

Table 1 Summary of Material Likely to Require Removal from Site

Material	**Estimate Quantity (tonnes)**	**Classification**
HDD Bore Material	3,600	Non-hazardous waste LoW Code – 01 05 04
Crushed stone	49,000	TII Series 600 Class 1
Asphalt/pavements build up	1,530	Where feasible this will be reused as a by-product. Where this is not possible it will be delivered as a waste to an authorised waste facility.
Haul Roads build up*	22,000	TII Series 600 Class 1
Flood defence embankment material	600	The flood defence embankment contains Japanese Knotweed and will be delivered to a waste facility authorised to accept these invasive species.

Material	Estimate Quantity (tonnes)	Classification
Tower foundation excavation	400	TII Series 600 Class 1 or Class 2
Substation site excavation material	23,000	Disposed of or recovered at an authorised waste facility
Hazardous material from substation site	2,000	Delivered to an authorised hazardous waste facility

* Reuse of haul road material subject to the routes being adequately maintained and not suspected to contain any suspected contamination.

It is considered that the predicted quantities of waste streams generated by the proposed development are small in the wider context of the national generation of waste materials.

1.1.2 Construction Waste

In the case of the proposed development, the most likely type of construction waste will be bituminous material from excavation, surplus concrete and unusable or damaged ducting segments which will arise on site.

Other than the waste generated from the earthworks, it is not expected there would be significant volumes of wastes sent for recovery or disposal at authorised waste facilities. There are a number of authorised waste facilities in the region suitable for recovery or disposal of wastes from the proposed development.

Liquid wastes (such as contained wheel-wash runoff, and sanitary waste) will be contained and dispatched off-site for disposal at appropriately licensed or permitted facilities.

Transport of material to and from the works areas will be managed in accordance with the Construction Traffic Management Plan in this CEMP, to ensure that there will be no queuing of trucks on public roadways around the works areas.

1.1.3 Measures to Achieve CWMP Aims

The measures to achieve the aims of waste prevention and minimisation include:

- Where possible recyclable material will be segregated and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation.
- Office and food waste arising on the construction compounds will be source-separated at least into dry mixed recyclables, biodegradable and residual wastes.

- Waste bins, containers, skip containers and storage areas will be clearly labelled with the waste types which they should contain, including photographs as appropriate.
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site.
- Material management 'just in time' delivery will be used so far as is reasonably practicable to minimise material wastage.
- The Contractor will ensure that the material transported off site will go to an appropriately licensed/permitted facility.
- The Contractor will record the quantity in tonnes and types of waste and materials leaving the site. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material which is recovered and disposed of.
- Paints, sealants and hazardous chemicals etc. will be stored in secure, bunded locations.
- All hazardous waste will be separately stored and labelled, in appropriate lockable containers, prior to removal from site by an appropriate waste collection holder.
- Waste generated on site will be removed as soon as practicable following generation for delivery to an authorised waste facility. In the unlikely event that asbestos is uncovered, the asbestos containing material will be double-bagged, stored, collected and removed from site by a competent Contractor and disposed of in accordance with the relevant procedures and legislation.

In addition to the measures inherent in the design of the proposed development, which will be implemented during the construction phase, the following mitigation measures will be implemented:

- The Contractor will minimise waste disposal so far as is reasonably practicable;
- Source segregation: Where possible, metal, timber, glass and other recyclable material will be segregated during construction works and removed off site to a permitted/licensed facility for recycling. Waste stream colour coding, and photographs of wastes to be placed in each container as required, will be used to facilitate segregation. Where waste generation cannot be avoided, segregation will maximise the quantity and quality of waste delivered for recycling and facilitate its movement up the waste hierarchy away from landfill disposal and reduce its environmental effect;
- Supply chain partners: The Contractor will engage with the supply chain to supply products and materials that use minimal packaging, and segregate packaging for reuse;
- Waste Auditing: The Contractor will record the quantity in tonnes and types of waste and materials leaving site during the construction phase;

- Waste fuels/oils will be generated from equipment used on-site during construction and will be classified as hazardous waste. Such wastes will be stored in a secure, bunded area on-site prior to collection by a haulier who holds the appropriate waste collection permit;
- Possibilities for re-use of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use. Where excavation material cannot be re-used within the proposed works the Contractor will endeavour to send material for re-use as a by-product, recovery or recycling so far as is reasonably practicable. Re-use as a by-product can be done under an Article 27 notification once the established EPA criteria for such re-use are met;
- Excavated material will be stored onsite within the planning (red line) boundary prior to re-use;
- The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, and which is disposed of; and
- The Contractor will ensure that any off-site interim storage or waste management facility for excavated material will have the appropriate waste licences or waste facility permits in place.

Export of hazardous waste from the proposed development outside of the State is subject to a Europe-wide control system founded on EU Regulation 1013/2006 on the Shipments of Waste (known as the Transfrontier Shipment Regulations), as amended (including Commission Delegated Regulation (EU) 2020/2174 of 19 October 2020). This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended, which makes Dublin City Council responsible for the enforcement of this regulatory system throughout Ireland. Export of hazardous waste from site outside the state will comply with the procedures set out in this legislation.

The quantities of hazardous waste generated during the construction phase are expected to be small and not of significance.

1.2 Monitoring

The Contractor's waste manager will monitor the implementation of this CWMP. The employer's representative will audit the waste segregation arrangements and the records of waste removed from site, haulier permits and the licences or permits of the waste management facilities to which the waste was sent.

1.3 References

Department of Environment Community and Local Government (2006) *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. DoECLG, Dublin, Ireland.*

EU Regulation 1013/2006 of the *Shipments of Waste*

Commission Delegated Regulation (EU) 2020/2174 of 19 October 2020 *amending Annexes IC, III, IIIA, IV, V, VII and VIII to Regulation (EC) No 1013/2006 of the European Parliament and of the Council on shipments of waste*

Appendix D – Invasive Species Management Plan

Appendix B-D

Invasive Species Management Plan

Contents

1 Introduction

Invasive plant species have been identified within and close to the construction works areas for the proposed Arklow Bank Wind Park Phase 2 Onshore Grid Infrastructure.

Two high-risk, non-native and invasive species Japanese Knotweed (*Fallopia japonica*) and Himalayan Knotweed (*Persicaria wallichii*) were recorded within the planning boundary. Hottentot Fig (*Carpobrotus edulis*) and Buddleia (*Buddleia davidii*) were also recorded within the planning boundary.

This Invasive Species Management Plan (ISMP) describes the strategy that will be adopted during the construction and operation of the proposed development to manage the knotweed and other invasive species. This ISMP is a working document. Following the appointment of the contractor, and prior to commencing works on site, the ISMP will be further developed by the contractor.

The main objective of the ISMP is to control and prevent the spread of invasive species during the construction phase.

2 Methodology

This plan applies the most relevant and current guidance in relation to the treatment and management of invasive plant species in construction projects. The following guidance was referred to in preparation of this plan.

- NRA *Guidelines on The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (2010)
- Invasive Species Ireland *Best Practice Management Guidelines Japanese Knotweed Fallopia japonica*, (2015).

3 Legislation

The control of invasive species in Ireland comes under the Wildlife (Amendment) Act 2000, where it states that

'*Any person who— [...] plants or otherwise causes to grow in a wild state in any place in the State any species of flora, or the flowers, roots, seeds or spores of flora, ['refers only to exotic species thereof'][...] otherwise than under and in accordance with a licence granted in that behalf by the Minister shall be guilty of an offence*.'

The Birds and Natural Habitats Regulations 2011 (SI 477 of 2011), Section 49(2) prohibits the introduction and dispersal of species listed in the Third Schedule, which includes Japanese Knotweed, as follows: "*any person who plants, disperses, allows or causes to disperse, spreads or otherwise causes to grow [….] shall be guilty of an offence."*

Buddleia and Hottentot Fig are not included in the Third Schedule. Therefore, their presence at the site does not have the potential to lead to an offence under the Birds and Natural Habitats Regulations 2011 (SI 477 of 2011). However, the National Biodiversity Centre (NBDC) notes that under the right ecological conditions these species may have an impact on the conservation goals of a European site or impact on a water body achieving good/high ecological status under the Water Framework Directive (Directive 2000/60/EC). Buddleia is also included in the NRA *Guidelines on the Management of Noxious Weeds and Non-native Species on National Roads* (NRA 2010) as this species has been shown to have an adverse impact on landscape quality, native biodiversity or infrastructure; and is likely to be encountered during road schemes.

4 Invasive Species in the Study Area

During the ecological site surveys undertaken by DixonBrosnan for the proposed development, the high-risk invasive species Japanese Knotweed and Himalayan Knotweed were recorded west of the substation site on the banks of the Avoca River.

Hottentot Fig was recorded on sea-cliffs close to the landfall location. This is listed as a high impact invasive species by the National Biodiversity Data Centre (NBDC). Although Hottenot Fig was recorded within the planning boundary, no construction works will take place on or in the vicinity of this location. Therefore, no disturbance or risk of the spread of this invasive species will occur as a result of the proposed development. Measures to prevent the spread of Hottenot Fig are therefore not required.

Buddleia is listed as a medium impact species by the NBDC and was recorded adjacent to the substation site and the access roads to the substation.

Refer to **Chapter 12** *Biodiversity* of the EIAR, for further information on the ecological surveys. The location of invasive species recorded within the study area are included in **Appendix 12.4 of Volume 3**.

5 Japanese and Himalayan Knotweed Management During Construction Phase

This purpose of this plan is to:

- Identify the extent of the infestation on the site
- Ensure further growth and spread of the plant on the site does not occur
- Ensure the plant is not spread to other sites either adjacent to the infested site or through transportation of contaminated soil to another site
- Identify the best method for managing and controlling Japanese Knotweed, Himalayan Knotweed and other invasive species on the site with regard to the proposed site works and construction methods
- Communicate the plan to all site operatives to ensure success of the plan
- Document and record the treatment and management methods carried out on site for future reference, for future site owners and site users and to avoid litigation.

The contractor will employ a suitably qualified ecologist to update the plan prior to the commencement of construction. The updated plan will contain the following:

- Site background including proposed works
- Extent of the Japanese Knotweed and Himalayan Knotweed infestation
- Specific control plan to be put in place
- Site hygiene protocols
- Responsible individuals
- Follow up requirements
- Any other relevant information

5.1 Management Options for Knotweed Species

There are a number of suitable management options to control and prevent the spread of Japanese Knotweed and Himalayan KnotweedThe methodology outlined in this document will be updated, if required, based on an uptodate survey of the contaminated area. The proposed management plan will be agreed with Wicklow County Council prior to the works being carried out. It should be noted that:

- Where any infested material (soil containing Japanese Knotweed or Himalayan Knotweed) is to be taken off site, a licence to transport the material will be required from National Parks and Wildlife Service (NPWS).
- A landfill, which is licensed to accept such material, will be identified to dispose of the excavated material. The landfill site operator will be informed of what the material contains.

- Where herbicide treatment will be used, consideration will be given to the proximity of the herbicide treatment to watercourses and other vegetation.
- For all management plans, site hygiene protocols will be implemented. These protocols will apply to sites which are infested with Knotweed and those where Knotweed is not growing to prevent contaminated material being brought to site. Site hygiene protocols are outlined in **Section 5.3** below.

5.2 Pre-Construction Survey

Since invasive species spread quickly, prior to the commencement of treatment, a pre-construction survey will be undertaken to identify the extent of invasive species at that time. The survey will be undertaken by a suitably qualified ecologist. This information will be utilised to update the ISMP.

5.3 Site Hygiene at Contaminated Areas

Construction equipment, vehicles and footwear may provide a vector for the spread of invasive species. Maintaining site hygiene at all times in an area affected by invasive species is essential to prevent further spread.

The following site hygiene measures will be implemented for the contaminated area:

- Understand the potential extent of the rhizome (root) system underground – up to seven metres horizontally and three metres vertically.
- Where possible, the contaminated area will be avoided and fenced off, or the extent of the rhizomes clearly marked.
- If possible, the use of machinery with tracks will be avoid contaminated areas. Movement of machinery between contaminated and non-contaminated areas must be controlled and adequate power washing measures implemented.
- Areas where contaminated soil is to be stockpiled on site will be clearly identified and marked out.
- Designated entry and exit points will be identified for personnel on foot and for small mobile equipment. A delineated access track, to be maintained free of Japanese Knotweed and Himalayan Knotweed, will be established through the site to minimise the spread of Knotweed species by permitted vehicles accessing the site.
- Vehicles, including footwear and tools, leaving the site will be inspected for any plant material and washed down (using a pressure washer) in a dedicated vehicular wheel wash down facility, which will drain into a contained area within the site. Particular care is required with tracked machines.
- Vehicles used in the transport of contaminated material will be visually checked and washed down into a contained area before being used for any other work, either in the same area or on a different site.

- Only vehicles required for essential works including site investigation works will be brought on site and the number of visits minimised as much as practicable.
- Material gathered in the dedicated wash down contained areas will be appropriately disposed of off-site.
- For any subsoil or topsoil entering the site, the supplier will be required to provide an assurance that it is free of Japanese Knotweed and Himalayan Knotweed.
- All site personnel will be made aware of measures to be taken and will be informed of the requirements of the ISMP.
- Site hygiene signage, in relation to the management of invasive species, will be erected.

5.4 Management Options

In addition to the possible advance treatment works and pre-construction survey, when the works areas become available to the contractor for enabling works, areas identified as requiring specific invasive species treatment will be demarcated and the designated control measures implemented at the earliest possible stage to reduce the risk of spread along the proposed scheme or beyond the land take.

There are a number of management options that may be implemented to control and prevent the spread of invasive species. These are presented in the sections below.

Those involved in the application of herbicides/pesticides will be competent to do so and, consequently, will have sufficient training, experience and knowledge in the area of herbicides/pesticides application.

All staff involved in the application of herbicides/pesticides will have received appropriate training, which may include achieving competency certification in the safe use of herbicides/pesticides through a National Proficiency Tests Council registered assessment centre or achieving an appropriate FETAC award in this area.

It is likely that chemical treatment, as described in **Section 5.4.1**, will be the most suitable method for the identified invasive species.

5.4.1 Chemical Treatment

The control of Japanese Knotweed and Himalayan Knotweed will require the use of herbicides, which can pose a risk to human health, to non-target plants or to wildlife. In order to ensure the safety of herbicide applicators and of other public users of the site, it is essential that a competent and qualified person carries out the herbicide treatment. A qualified and experienced contractor will be employed to carry out all treatment work.

The contractor will follow the detailed recommendations of the following documents for the control of invasive species and noxious weeds:

- Chapter 7 and Appendix 3 of the TII Publication: *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads* (NRA, 2010)
- *Best Practice Management Guidelines for Japanese Knotweed* (Invasive Species Ireland, 2015)
- Circular Letter NPWS 2/08 *Use of Herbicide Spray on Vegetated Road Verges* (National Parks and Wildlife Service 2008)

These documents include measures to aid the identification of relevant species, with details for the timing, chemicals and methodology for chemical control, and for measures to avoid environmental damage during the use of herbicides.

Chemical treatment involves the application of an herbicide to invasive species plant such as Japanese Knotweed stands without any excavation or removal of the plant material. The preferred types of herbicides to be used in the treatment of Knotweed are Glyphosate and 2,4-D Amine.

If herbicide is applied as the treatment option, it may need to be reapplied for up to five years after the first application to ensure the plant control measures have been effective.

Glyphosate is non-persistent and can be used near water but it is not selective (i.e. it is a broad spectrum chemical and will impact all plant species) whereas 2,4-D Amine can be persistent for up to one month, and can also be used near water but is more selective on certain plants. The selection of chemical by the contractor and supervising ecologist will depend on seasonal factors, site conditions, proximity to water, surrounding habitats etc.

The most effective time to apply Glyphosate is from July to September (or before cold weather causes leaves to discolour and fall). The majority of herbicides are not effective during the winter dormant stage because they require living foliage to take up the active ingredient.

Reapplication rates will depend on site specific considerations including the extent of the infestation, its location, and the time of year treatment commences. Details of the proposed chemical treatment plan will be included in the updated ISMP.

Foliar treatment (spraying) is usually applied with a sprayer such as a knapsack sprayer or a larger spray system. It is important to use a treatment dye to identify clearly all areas treated. Foliar treatment is an efficient way to treat large monocultures of invasive plants, or to spot-treat individual plants that are difficult to remove mechanically such as Japanese Knotweed.

In the case of Knotweed, depending on weather and temperatures in the days following the initial treatment, and to ensure optimal uptake of herbicide into the rhizome system, a second similar treatment will be required usually within ten days, before the internal vascular system is no longer capable of translocating the herbicide to the root system.

While the upper surface of the leaves will be easier to treat, it is also important to treat the leaf under surface as Knotweed possesses many stomata openings on the leaf under surface. Dead stems can be cut, removed and burned on/off site in accordance with the relevant legislation.

The stem injection method is sometimes used for Japanese Knotweed control. This treatment requires a higher concentration of the active ingredient than is used in foliar applications. It involves the use of a specialist herbicide injection tool whereby the injection tool injects the herbicide directly into each of the canes approximately 20-30cms from the base of each cane (between the 1st and 2nd nodule).

Subsequently approximately 10 mL of herbicide mix is injected into each cane at a ratio of 5:1 through the use of a specialist stem injection tool. The application of glyphosate-based products by injection is most effective when applied in the early Autumn (mid to late Sept). Regrowth will occur in subsequent years, albeit much less vigorously, which will require follow up treatment at the appropriate time of year. Spot treatment will be required each year until no regrowth is observed.

In order to ensure that the use of herbicides does not contravene legislation, the contractor must comply with Circular Letter NPWS 2/08 *Use of Herbicide Spray on Vegetated Road Verges* from the National Parks and Wildlife Service dealing with the application on to non-target areas.

5.4.2 Excavation and Chemical Treatment On-Site

This option employs both physical and chemical methods of treatment. This method is employed in situations where treatment of invasive species, in particular Knotweed, is required to be completed in a relatively short timeframe. Generally, digging up the rhizomes and re-cultivating it stimulates plant growth and will result in more successful herbicide application and management.

In summary, this management method requires cutting and killing of the surface plant. The cut material must be left on top of plastic sheeting until dried out and subsequently monitored for any sign of regrowth. Storage of cut material should not take place within flood risk zone of a river. The cut material should not be placed in a green waste recycling bin. Once dried out, the material should be burned on site in accordance with the relevant legislation. The surface of the affected area should be raked with tines to remove crowns and surface material, and in order to break up the rhizomes, bringing them to the surface, which will stimulate leaf production. This will make the plant more vulnerable to herbicide treatment. The more rhizomes that are brought to the surface, the more growth will occur, allowing for a more successful treatment. An excavator can be used to scrape the surface crowns and rhizomes into a pile and then to cultivate the ground to stimulate rhizomes to produce a higher density of stems for treatment. Reapplication of herbicide may be required for up to five years after initially application, subject to the site-specific management plan.

5.4.3 Excavation and burial

Excavated material containing Knotweed can also be buried on site. This will require burying the material at a depth of at least five metres. The contaminated material must be covered with a root barrier membrane before being backfilled with topsoil, or other, suitable fill material. The manufacturer's guarantee is required that the membrane will stay intact for at least 50 years. An accurate map and record of the location of the burial site, to prevent any future accidental disturbance, is required, and future owners must be informed of its position. If soil containing Japanese Knotweed is stockpiled, the material must be stored in a manner that will not harm health or the environment. The stockpile should be on an area of the site that will remain undisturbed. The area should be clearly fenced and marked with warning signs, and the stockpile should be regularly treated with herbicide to prevent any regrowth or re-infestation.

As a precaution, the stockpiled material should be laid on a root barrier membrane and covered to avoid contaminating the site further. The contractor must also comply with all waste legislation.

5.4.4 Excavation and root barrier cell method

Excavated material containing Knotweed can also be buried on site within a root barrier membrane cell. The procedure is similar to that described in **Section 5.4.3** above.

This method will require burying the material at a depth of at least two metres. The contaminated material must be placed in a contained cell formed by a root barrier membrane before being backfilled with topsoil, or other, suitable fill material. The manufacturer's guarantee is required that the membrane will stay intact for at least 50 years. The method for stockpiling prior to burial would be as described as above. The contractor must also comply with all waste legislation.

5.4.5 Excavation and bund method

Where there is not sufficient depth on a site excavated material can be placed in a structured bund. The bund will comprise a raised area above ground level or a shallow excavation, no more than 0.5m deep, and lined with a root barrier membrane. The manufacturer's guarantee is required that the membrane will stay intact for at least 50 years. This method of treatment can also be used where Knotweed material needs to be moved from a location and there is another area of the site available to contain it.

The aim of this method is to concentrate the rhizome material into the upper surface of the bund, where it will grow and be controlled by herbicide. If the rhizome is buried deep, it will become dormant when inside the bund and regrow when the apparently clean soil is used for landscaping on the site. The bund location needs to be clearly marked by warning signs and protected from potential accidental damage. Reapplication of herbicide may be required for up to five years after the initial application, subject to the site-specific management plan.

The appointed contractor must comply with waste legislation if this method is to be considered.

5.4.6 Excavation and removal from site

Where the above treatment options are not possible because the site is too small to contain excavated material, or too shallow for burial, or where there is a lack of space or where the infestation simply cannot be avoided by the construction works, removal of excavated material may be the only option. If any invasive species plant material is collected (e.g. by hand-pulling or mowing), it is important that its disposal will not lead to a risk of further spread. Where there are small amounts of Knotweed material to be removed it is possible to double bag the material and send to a licenced waste facility for disposal. Where the amount of material is larger in volume, it will be necessary to haul it from site to a suitably licenced waste facility.

Invasive species material, particularly roots, flower heads or seeds, must be disposed of at licensed waste facilities appropriately buried, or incinerated in compliance with the relevant legislation. Disposal must be carried out in accordance with the relevant waste management legislation. Invasive species plant material or soil containing residual herbicides may be classified as either ‘hazardous waste’ or ‘non-hazardous waste’ under the terms of the Waste Management Acts, and both categories may require special disposal procedures or permissions. If the material has been treated with a persistent herbicide, the excavated material must be classified as hazardous waste and must be disposed of to a hazardous waste facility. Advice would need to be sought from a suitably qualified waste expert regarding the classification of the waste and the suitability of different disposal measures.

The movement of invasive plant material requires a licence from the NPWS under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended).

5.5 Preferred Treatment Option – Advance Chemical Treatment and Continued Chemical Treatment of Regrowth

The Knotweed within the proposed development boundary is located on existing flood defence structures. As there is the potential for flooding to impact on the area currently contaminated with Knotweed species, there is the potential for fragments of Knotweed to be spread from the works area and inadvertently distributed off-site.

Within this area, improvement works to a section of the flood embankment at the Avoca River Business Park is proposed as detailed in **Chapter 6** *Construction Strategy*. The substation site flood defence improvement works will comprise localised raising of the existing flood defence embankment level for a length of up to 75m.

Up to approximately 160m of temporary drainage and an access track will be constructed from the Avoca River Business Park along the northern side of the existing embankment.

Having assessed the available management options and constraints associated with this particular site, it has been concluded that in-situ chemical treatment prior to construction, careful management of the works and continued in-situ chemical treatment post construction is the preferred option. This is primarily due to the following significant constraints;

- The Knotweed contamination to the west of the substation is located on an existing flood defence structure and although limited excavation within this area will occur, it is preferable to avoid large scale excavation and removal of Knotweed contaminated material which could damage the existing flood defence structure and increase the risk of flooding to the site.
- The risk of fragments of Knotweed being spread outside of its current distribution is high as high flood levels could result in fragments of Knotweed, which are dislodged during site works, being carried downstream along the Avoca River and thus impacts on off-site receptors could occur.
- Given that flooding could impact on existing stands of Knotweed, large scale foliar spraying is not recommended and therefore only stem injection and spot treatment is practical as a first treatment method. For the re-growth material within the site or juvenile plants, a foliar spray application using a cowled knapsack sprayer will allow for efficient treatment when stems are too small and fragile to use stem injection.

Therefore, the following methodology is proposed:

1. Landowners will commence chemical treatment of the Knotweed species in this area, in order to avoid the continued spread of the species, under the ongoing maintenance of the Avoca River Business Park. The preferred method for initial treatment is stem injection and spot treatment. This will be carried out under the supervision of a qualified ecologist who will ensure that the correct methodology and appropriate site hygiene methods are utilised. This ISMP will be updated by the supervising ecologist if required. Early treatment will effectively reduce the length of time that chemical treatment will be required. It is noted that Knotweed can persist for long periods and the sooner treatment commences, the more rapidly this species will be eradicated from the works area.
2. Prior to the commencement of site works, the extent of contamination will be determined by site investigations including trial pits. This information will be used to determine the area of contamination taking into account that the roots of Knotweed can extend 7m from the parent plant. If it is determined by visual inspections/trial hole investigation that viable plants remain within the work area the spreading of this viable Knotweed plant material outside the current area of contamination is not permitted.
3. Following the above, the identified area of contamination will be clearly fenced and all works in relation to Knotweed will be carried out only within this fenced area.

4. Where possible, contaminated soil will remain on-site and be treated. The transport of any material that must be removed off site for disposal, as part of the construction works, will require a licence from the NPWS.
5. Any excavations that are carried out as part of the project, must be contained within this area and the spread of any fragments of viable plant material or contaminated soil outside of this area must be effectively prevented. All hygiene protocols as listed in this ISMP must be effectively implemented.
6. Any contaminated material including material from the wash down area must be contained within the identified and fenced contaminated area or removed to a suitably licenced facility offsite in line with standard hygiene measures.
7. Once works within the contaminated area is complete a follow-up programme of works will commence to treat any regrowth of Knotweed. This will consist of stem injection and spot treatment and it will continue until the supervising ecologist can certify that Knotweed has been effectively eradicated.
8. The application of herbicide (injection/spot treatment) must take into account the risk of flooding which must be assessed immediately prior to the use of herbicides. Treatment will not be carried out when heavy rain is forecast or in the winter period when there is a higher risk of flooding and adverse weather. It is noted that site hygiene is of particular importance in areas prone to flooding.

6 Buddleia Management During Construction Phase

As noted in **Section 3** of this report, there is no statutory obligation to remove Buddleia. However, should it be concluded that Buddleia at the proposed development site should be removed, the following treatment methods are recommended.

Buddleia is straightforward to control using a mixture of mechanical removal and herbicide treatment.

Buddleia is a plant that favours disturbed sites, physical grubbing of plants can provide ideal conditions for the germination of seeds. Therefore, care needs to be taken to ensure re-vegetation of controlled areas is undertaken swiftly. The branches of Buddleia are capable of rooting as cuttings, so care should also be taken to ensure material is disposed of in a manner to avoid this risk. Site hygiene measures outlined is **Section 5.3** should be implemented where relevant.

As mature plants occur within the proposed works area, the preferred method of treatment is cutting back to a basal stump or grubbing out followed by chemical treatment. Herbicide applications will take into account sensitive receptors such as watercourses and locally important habitats such as woodland and must only be applied in line with manufacturers recommendations.

Recommended practice for the application of herbicides requires cutting back of plants to a basal stump during active growth (late spring to early summer) which is then treated (brushed on) immediately with a systemic weed killer mix (Starr *et al*, 2003). Foliar application of triclopyr or glyphosate may be adequate for limited infestations of younger plants, but should be followed up at 6 monthly interval until the supervising ecologist can certify that the plant is no longer extant within the works area.

7 Invasive Species Management – Operational Phase

7.1 Protecting Flood Defence Structures

As part of the operation phase, there will need to be on-going management of any invasive species found on the flood defence embankment, where it could potentially compromise the structural integrity of the embankment. A management plan for the operational phase will be implemented. This will comprise monitoring to detect any new or re-occurrence of infestation and chemical treatment as described in **Section 5.4.1** above.

8 Conclusion

Japanese and Himalayan Knotweed are high risk invasive plant species and will be treated in accordance with this ISMP.

The primary concern is the presence of Knotweed species within the flood embankment area to the west of the substation site where some improvement works are proposed.

Herbicide treatment of Knotweed via stem injection and spot treatment will commence as soon as practically possible under the supervision of a qualified ecologist. Site investigations will be carried out prior to the commencement of works to determine if Knotweed species are still present and the degree of contamination.

This information will be utilised to determine the extent of the contaminated area and will be utilised to update this ISMP. Detailed fencing and hygiene protocols will ensure that viable plant material will not be spread outside of its current distribution area. Following completion of works, monitoring and treatment protocols will be implemented to ensure any regrowth is effectively treated.

Buddleia is considered a lower risk species and will be treated via cutting back to a basal stump or grubbing out followed by chemical treatment. Treatment will continue until the supervising ecologist certifies that this species has been effectively removed from the works area.

9 References

- National Roads Authority (2010) *The Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads*
- Invasive Species Ireland (2015) *Best Practice Management Guidelines for Japanese Knotweed*
- National Parks and Wildlife Service (2008) Circular Letter NPWS 2/08 *Use of Herbicide Spray on Vegetated Road Verges*
- US Geological Survey – Biological Resources Division. Starr, F., Starr, K. & Loope, L. (2003). *Buddleia davidii*. Maui, Hawaii