

Volume 8: Appendices (Introductory)

Appendix 9.1
Onshore Construction
Environmental
Management Plan

Onshore Construction Environmental Management Plan (CEMP)

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1. Introduction

This Onshore Construction Environmental Management Plan (CEMP) has been prepared by Arup to support North Irish Sea Array Windfarm Limited, (hereafter referred to as *'The Developer'*)'s application for consent for the proposed North Irish Sea Array (NISA) Offshore Wind Farm (hereafter referred to as *'the proposed development'*).

The proposed development can be grouped into two main areas – offshore and onshore. Two separate plans have therefore been prepared on this basis:

- This Onshore CEMP prepared by Arup on behalf of the Developer, which refers to all onshore infrastructure construction works of the proposed development landward of the high water mark (HWM);

- A separate Offshore Environmental Management Plan (Offshore EMP), prepared by GoBe on behalf of the Developer, which refers to all offshore elements of the proposed development seaward of the HWM.

1.1. Purpose of the Onshore CEMP

This Onshore CEMP has been produced as part of the application for consent to ensure compliance with legislative requirements and the Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) that have been prepared for the onshore proposed development.

This Onshore CEMP summarises the overall environmental management strategy that will be implemented during the construction phases of the onshore infrastructures of proposed development. The purpose of this Onshore CEMP is to provide a framework that outlines how the Developer will supervise, and how any contractors appointed by the Developer will manage and implement, the mitigation measures described in the EIAR and NIS, in order to minimise negative environmental effects during the construction of the proposed development.

This Onshore CEMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout construction. Compliance with this Onshore CEMP does not absolve the contractors or sub-contractors from compliance with all legislation and bylaws relating to their construction activities. The methods and principles contained herein, as well as within referenced legislative instruments and published guidance documents, will be adhered to by the contractors in developing construction method statements and other plans relating to environmental management as required by the contracts.

This document must be read in conjunction with the EIAR and NIS.

1.2. Structure of this Onshore CEMP

This Onshore CEMP has been structured as follows:

- Section 1: Introduction describes the purpose of this Onshore CEMP;
- Section 2: Proposed Development Details summarises the onshore infrastructure of the proposed development;
- Section 3: Project Team describes the roles and responsibilities of the construction phase team;
- Section 4: General Site Management and General Environmental Requirements;
- Section 5: Schedule of Environmental Commitments describes the control measures that will be implemented;
- Section 6: Environmental Emergency Response Procedures;
- Section 7: Training and Auditing describes the training and auditing protocols that will be implemented; and

- Section 8: Communications and Complaints describes the communications and procedure for complaints.

A Construction Traffic Management Plan (CTMP) and Construction Resource and Waste Management Plan (CRWMP) have been provided in the following Appendices:

- Appendix A: Construction Traffic Management Plan
- Appendix B: Construction Resource and Waste Management Plan
- Appendix C: NISA Communications Plan in Support of Onshore CEMP

1.3. Reference Documents

The Onshore CEMP will be developed using suitable industry best practice guidance. Guidance from statutory bodies will also be considered. General guidance that will be adopted across all work packages includes as a minimum:

- CIRIA (2015) Environmental good practice on site guide (fourth edition) (C741)
- CIRIA (2016) Environmental good practice on site pocket book (fourth edition) (C762)
- CIRIA (2015) Coastal and marine environmental site guide (second edition) (C744)
- CIRIA (2002) Brownfield development sites: ground-related risks for buildings (X263);
- CIRIA (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532);
- ISO (2015) ISO 14001:2015 Environmental Management Systems -- Requirements with guidance for use;
- National Roads Authority; Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (undated);
- OPW Series of Ecological Assessment on Arterial Drainage Maintenance No 13: Environmental Guidance: Drainage Maintenance and Construction (2019).

1.4. Updating the Onshore CEMP

This document will be further developed by the appointed contractors, within the parameters assessed in the application particulars, taking into account any conditions of the planning permission, the results of confirmatory surveys and any additional measures identified during the detailed design.

Following appointment, the contractors will be required to develop more specific Method Statements and submit a more detailed (bespoke, contract-specific) Onshore CEMP that is cognisant of the proposed construction activities, equipment and plant usage and environmental monitoring plan for the proposed scheme. This Onshore CEMP should not be considered a detailed Construction Method Statement as it will be the responsibility of the contractors appointed to undertake the individual works, in association with the

Developer, to implement appropriate procedures and progress this documentation prior to commencement of construction.

Due to the varying nature of the onshore construction works (e.g. landfall HDD, railway HDD, grid facility and onshore cable), there will be multiple contracts. This Onshore CEMP will form part of all of the onshore construction works contracts.

Section 3, which addresses Roles and Responsibilities, will be adjusted to reflect the various contractor's project teams and will be populated. Each of the contractor's Environmental Management System (EMS) for the proposed scheme, which will be devised according to the criteria of ISO 14001:2004 – Environmental Management Systems, will be appended.

This Onshore CEMP will remain a 'live' document which will be reviewed regularly and revised as necessary and appropriate, it will be kept on site at all times and all members of the site teams will be aware of and comply with this document. This document will be implemented onsite in conjunction with industry good practice, published guidance documents, and other documents referred to within the Onshore CEMP (refer to Section 1.4.1).

All of the requirements of the Onshore CEMP will be delivered in full by the contractors. Updating of the Onshore CEMP by the contractors will not affect the robustness and adequacy of the information presented here and relied upon in the EIAR and NIS.

The Onshore CEMP will be complemented by the contractor's General Procedures, Work Procedures and Operations Instructions. These documents will be in place within the site administration offices and appropriate site locations during works.

Contract documents will require the contractors to submit the updated Onshore CEMP to the Developers' Project Management Team within 28 days after receiving notice of the Commencement of Works from the Developers' Project Management Team and at defined intervals thereafter. The Developers' Project Management Team will review the contractors CEMP(s) at regular intervals to ensure compliance with the environmental provisions of the contracts.

2. Proposed Development Details

The proposed development is an offshore wind farm and will comprise both onshore and offshore infrastructure. The proposed development boundary, within which the proposed development is located, will include offshore infrastructure off the coast of Counties Dublin, Meath and Louth and onshore infrastructure within County Dublin (Fingal and Dublin City Council administrative areas). The location of the proposed development is illustrated in Figure 1.1 of Volume 7A of the EIAR.

A high-level overview of the proposed development is provided below, with more detailed descriptions provided in Chapters 6 and 7 of Volume 2 of the EIAR submitted in support of this application.

Offshore Infrastructure (located within and Array area and export cable export corridor (ECC)):

- Offshore wind turbine generators (WTGs) and their associated foundations.
- Inter-array cables which will connect the WTGs to the Offshore Substation Platform (OSP).
- An OSP and associated foundations; and
- Offshore export cable(s) which will deliver the generated power from the OSP to the high-water mark (HWM) as defined by Ordnance Survey Ireland mapping, (the HWM being the transition point between the offshore and onshore infrastructure).

Onshore Infrastructure:

- Offshore export cable(s) from the HWM to the landfall transition joint bays (TJBs).
- Transition joint bays (TJBs) where the offshore and onshore export cables are joined.
- Onshore export cable(s) from the TJBs to the grid facility.
- A Grid Facility, comprising a compensation substation and Bremore substation, together within ancillary infrastructure.
- Onshore cable(s) from the grid facility to the Belcamp Substation; and
- A connection from the onshore cable(s) to the national electricity transmission network at Belcamp Substation.

Image 1.1 below illustrates the offshore and onshore infrastructure of the proposed development and the interface between each. The focus of this Onshore CEMP is on the onshore infrastructure – i.e construction works landward of the HWM. Refer to the Offshore Environmental Management Plan (Offshore EMP) for details on the offshore construction management strategy. Note this Onshore CEMP must be read in conjunction with Chapters 7 Proposed Development Onshore and 9 Construction Strategy Onshore of Volume 2 of the EIAR.

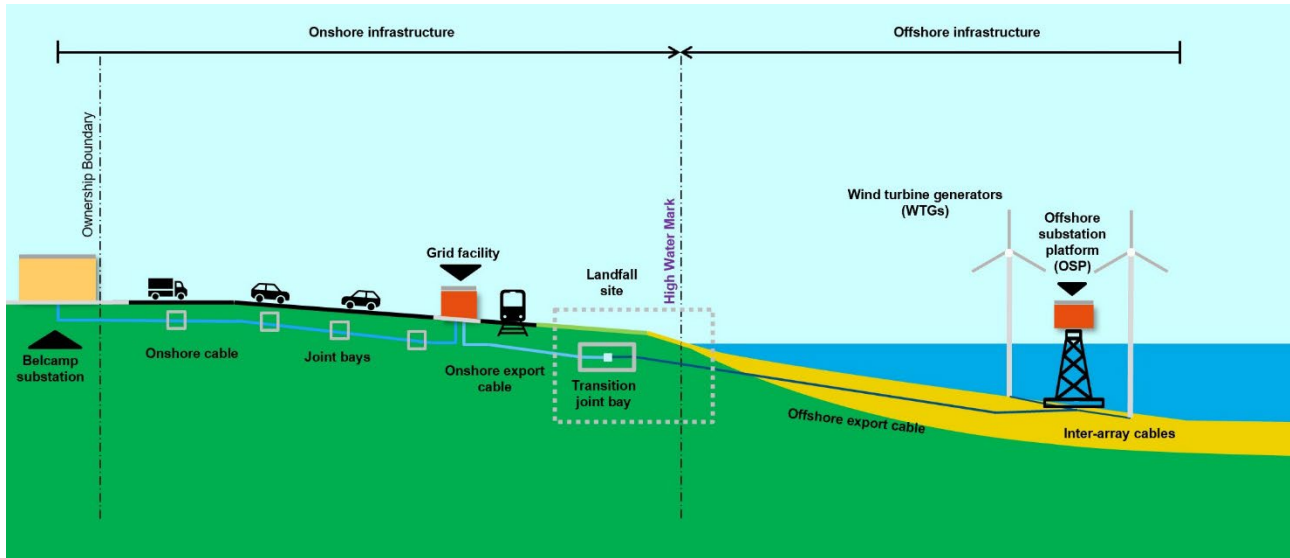


Image 1.1 Infrastructure of the proposed development (not to scale)

3. Project Team

3.1. Roles and Responsibilities

Due to the varying nature of the onshore construction works (e.g. landfall HDD, railway HDD, grid facility and onshore cable), there will be multiple contractors employed by the Developer. The Developer will have a dedicated Project Management Team which will manage all onshore construction contractors. The roles and responsibilities outlined below are indicative and will be updated on the appointment of the contractors. Details of the various contractors' and their responsibilities will be added to the finalised Onshore CEMP. An outline of potential roles is provided below but will require revision.

The general role of key people on site implementing the Onshore CEMP will be;

- The Project Manager - liaises with the project team in assigning duties and responsibilities in relation to the CEMP to individual members of their respective contractor's project team.
- The Construction Manager - liaises with their respective Environmental Manager when preparing site works where there is a risk of environmental damage and manages the construction personnel and general works.
- The Design Engineer - undertakes and certifies the design and supervises the standard of works, including geotechnical aspects.
- The Environmental Manager - ensures that the CEMP is developed, implemented and maintained.

Other roles are outlined as follows;

- Health and Safety Officer

- Environmental Clerk of Works (EnCoW)
- Ecological Clerk of Works (ECoW)
- Community Liaison and Stakeholder Liaison Officer
- Other Environmental Specialists

3.2. Project Manager(s)

A Project Manager shall be appointed on behalf of their respective contractor to manage and oversee the construction of the respective works. The Project Manager is responsible for:

- Implementation of the Onshore CEMP.
- Implementing the Health and Safety Plan.
- Management of their respective construction project.
- Liaison with the client/developer.
- Liaison with the client Project Management Team.
- Assigning duties and responsibilities in relation to the Onshore CEMP.
- Production of construction schedule.
- Materials procurement.
- Maintaining a site project diary.

3.3. Construction Manager(s)

The Construction Manager(s) manages all the works to construct the onshore infrastructure, on behalf of their respective contractor. The Construction Manager reports to their respective Project Manager. In relation to the onshore CEMP, the Construction Manager is responsible for:

3.3.1. Site-Specific Method Statements

- Liaising with their respective Environmental Manager in preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage, by incorporating relevant Environmental Control Measures and referring to relevant Environmental Control Measure Sheets.
- Liaising with their respective Environmental Manager in reviewing and updating site-specific Method Statements for all Works activities where Environmental Control Measure and Environmental Control Sheets have been altered.
- Liaising with their respective Environmental Manager where third party agreement is required in relation to site-specific Method Statements, Environmental Control Measures and/or Environmental Control Measure Sheets.

3.3.2. General

- Being aware of all project's environmental commitments and requirements.
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from their respective Project Manager to their respective Environmental Manager in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required.
- Programming and planning of excavation works and communicating this schedule to their respective Environmental Manager.
- Ensuring that adequate resources are provided to design and install any environmental interventions.
- Liaising with their respective Design Engineer and providing information on environmental management to their respective Design Engineer during the course of the construction phase.
- Liaising with the Developer's Project Management Team in assigning duties and responsibilities in relation to the onshore CEMP to individual members of the contractor's project staff.
- Ensuring that the Environmental Manager performs regular and frequent environmental site inspections.

3.4. Design Engineer(s)

The Design Engineer(s) is appointed by the contractor(s) for the works. The Design Engineer reports to their respective Project Manager and is responsible for:

- Design of the works;
- Review and approval of relevant elements of the method statements – assist their respective Construction Manager with the overall review;
- Oversee geotechnical aspects of the works (a geotechnical engineer may be used where required).
- Participating in Third Party Consultations;
- Liaising with Third Parties through their respective Environmental Manager.

3.5. Environmental Manager

The contractor(s) will employ an Environmental Manager(s) 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 Onshore CEMP/EIAR/NIS 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 Environmental Clerk of Works (EnCoW) and/or Ecological Clerk of Works (ECoW), deals with 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.

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

3.6. Ecological Clerk of Works (ECoW)

An Ecological Clerk of Works (ECoW) will be employed by the Developer to oversee implementation of ecological mitigation and responsible for wider environmental mitigation. This will include monitoring and auditing the works and the contractors' programmes and works method statements, to ensure mitigations are correctly implemented.

The ECoW will advise on ecological mitigation measures to be implemented and will be included in regular liaison meetings between project teams. The appointed ECoW will deliver a toolbox talk to all contractors including sub-contractors prior to construction starting. The duties of the ECoW will be to monitor the efficacy of mitigation measures implemented by the contractors and to report on the application and success of these measures. In the event of pollution occurring or the potential to occur, the ECoW has a 'Stop Works' authority to ensure measures to stop a pollution event are implemented immediately.

3.7. Environmental Clerk of Works (EnCoW)

The Environmental Clerk of Works (EnCoW) will be employed by the Developer. The EnCoW will have suitable environmental qualifications and the necessary experience and knowledge appropriate to the role. The EnCoW will be delegated sufficient powers so that they will be able to instruct the respective contractor to stop works and to direct the carrying out of emergency mitigation / clean-up operations. The EnCoW will also manage consultation with environmental bodies including the National Parks and Wildlife Service (NPWS) and Inland Fisheries Ireland (IFI).

The EnCoW will also report monitoring findings in writing to the Developer's Project Management Team on a regular basis (at least weekly, but immediately in the case of incidents or accidents). The EnCoW will also coordinate regularly with the Environmental Managers for implementing the Onshore CEMP.

3.8. Other Environmental Specialists

The responsibilities of the experts may include the following, as relevant to their technical area:

- Ensure that all mitigation measures used to protect the environment are in place and are maintained during the works;
- Undertaking and reporting on weekly monitoring and undertaking weekly site inspections;
- Revising the mitigation measures if the monitoring evidence indicates that the measure is not effectively protecting the environment;

- Installation of bat boxes if required;
- Reviewing of construction lighting during night-time works;
- Supervising of any excavation (such as archaeologist), as required;
- Undertaking archaeological surveys and monitoring as required;
- Provide toolbox talks to all sub-contractors before they start on site; and
- Carry out surveys and monitoring as detailed in the Onshore CEMP, the EIAR and NIS.
- Other Environmental Specialists may include (among others) a Licensed Onshore Archaeologist.

3.9. Community Liaison and Stakeholder Liaison Officer

The Community Liaison and Stakeholder Liaison Officer will be responsible for managing tasks such as the following:

Liaising with the Project Manager(s) and the Developer's Project Management Team; 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 the various local authorities and emergency services as appropriate; and

Liaison with local Gardaí, particularly in relation to traffic movements and permits where necessary.

Refer also to Section 8 below for further details.

3.10. Health and Safety Officer

A Health and Safety Officer will be appointed to ensure all relevant health and safety, fire safety and security requirements are in place prior to commencement of the onshore works, and in accordance with the relevant legislative requirements.

Relevant Irish and EU health and safety legislation will be complied with at all times by all construction staff and personnel during construction. Further, Contractors will have to ensure that all aspects of their works comply with good industry practice and all necessary consents, licences and authorisations that have been put in place for the proposed scheme.

3.11. Contacts Sheet

A project Contacts Sheet will be prepared to include a list of all Developers, contractors and relevant third-party contact details. The contractors will update this sheet and ensure it is up to date for the duration of the contracts.

An emergency contact list will be established by the contractors and made available to all construction staff employed. The contact list shall be displayed prominently on site as well as at suitable locations where

construction activity is being carried out around various working areas. The contact list will include key environmental representatives that may need to be contacted in the event of an incident. A list of typical emergency contacts has been provided in Section 6.5 of this Onshore CEMP.

4. General Site Management and Environmental Requirements

4.1. Introduction

The sections below outline the general site management and general environmental requirements which will be in place during the onshore construction phase. These details are also presented in Chapter 9 Construction Strategy - Onshore, of the EIAR. Every effort will be made to ensure that any significant environmental effects will be avoided, prevented or reduced during the construction phase of the proposed development. This Onshore CEMP comprises all of the construction mitigation measures which have been detailed in the EIAR and NIS and these are provided under Section 5.

4.2. General Measures

Steps will be taken to reduce the probability of an incident occurring and to also reduce the magnitude of any incident by a combination of good site environmental management procedures, including additional precautions when operating machinery close to watercourses, soil management, staff training, contingency equipment, and emergency plans. Key measures identified to reduce the risk of pollution, erosion and sedimentation of waterways are provided in Section 5.

4.3. Landfall site

For the Horizontal Directional Drilling (HDD) at the landfall, any ground water 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.

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. Further details on mitigation are provided in Section 5.

4.4. Grid Facility

Steps will be taken to reduce the probability of an incident occurring and to also reduce the magnitude of any incident from a combination of good site environmental management procedures, including additional precautions when operating machinery close to watercourses, soil management, staff training, contingency equipment and emergency plans. Further details on mitigation are provided in Sections 5-9 of this Onshore CEMP.

In addition to the measures described above:

- 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.
- All made ground excavated in the course of installing underground services, which is not suitable for reuse on site, or surplus to requirements, will be stockpiled, tested and classified for recovery or disposal. Refer to Volume 5, Chapter 31: Resource and Waste Management of the EIAR for further information. The mitigation measures provided in Chapter 31 are also replicated in Section 5 below.

4.5. Onshore Cable Route

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.

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.

Further details on mitigation are provided in Section 5.

4.6. Construction Traffic Management Plan (CTMP)

A Construction Traffic Management Plan (CTMP) has been prepared and is included in Appendix A of this Onshore CEMP. The contractor(s) will update and develop the CTMP prior to construction and this will be agreed with Dublin City Council and Fingal County Council.

The CTMP will minimise the disruption to the public and the road users in the vicinity of the working areas during the construction phase of the works. The plan will include all suitable temporary signage, barriers and hoarding as necessary. Volume 4, Chapter 24: Traffic and Transportation of the EIAR provides more information on the issues addressed in the plan.

4.7. Construction Resource and Waste Management Plan (CRWMP)

A Construction Resource and Waste Management Plan (CRWMP) has been prepared and is included in the Appendix B of this Onshore CEMP. This Plan sets out how resources and waste will be managed throughout

the project, in accordance with relevant legislation and best practice. The contractor(s) will update the CRWMP prior to construction.

An Environmental Incident and Emergency Response Plan is included in Section 8 of this Onshore CEMP, which will cover all foreseeable risks during the construction stage, including fire, flood, collapse and accidental spills and releases of hazardous substances. The plan will be further developed by the contractor(s), prior to construction commencing.

In further developing the plan, the contractor(s) will be required to liaise with the emergency response services. Further information is provided in Section 8 of this Onshore CEMP.

Appropriate site personnel will be trained as first aiders and fire marshals.

4.8. Good Housekeeping

The Contractors will ensure “good housekeeping” at all times. The following points (not exhaustive) indicate general housekeeping measures in accordance with published guidance (Section 1.3) and project commitments. Pollution prevention measures are detailed in Section 5 of this document.

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

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, spill kits, material and waste storage and welfare facilities;
- Maintaining all plant, material and equipment required to complete the construction work in good order, clean, and tidy;
- Keeping construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Provision of signs giving details of site management contact numbers, including out of hours, and public information at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding at each working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged (Refer also to the CRWMP in Appendix B of this document);
- Prevention of infestation from pests or vermin including arrangements for regular disposal of food and material attractive to pests. If infestation occurs the contractors will take appropriate action to eliminate and prevent further occurrence;
- Maintenance of wheel washing facilities and other contaminant measures as required in each working area;
- Prohibition of open fires at all times;

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

4.9. Working Hours

As noted in Section 9.8.2 of Chapter 9 of the EIAR, the timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant effects.

The normal construction working hours for the onshore proposed development works will be 7am – 7pm: Monday to Saturday. These hours correspond to the current construction programme.

All construction works will be carried out during normal working hours with the following specific exceptions:

- HDD works at the landfall HDD contractor compound and the railway HDD contractor compound, both of which will require 24-hour working
- HDD works at the following watercourse crossings, which may require 24-hour working: watercourse crossings 5, 6, 7, 9, 10, 16, 17 and 18.

Nearby sensitive receptors including residential receptors and sensitive non-residential receptors such as schools will be notified of any activities involving 24-hour a day working 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 (further detail can be found in the Construction Traffic Management Plan (Appendix B of this Onshore CEMP).

It may be necessary, due, for example, to weather constraints, specialist subcontractor availability or the nature of the activity, to undertake certain other activities outside of the normal construction working hours. Any other construction outside of the normal construction working hours will be agreed in advance with Fingal County Council and Dublin City Council. The scheduling of such works will have regard to nearby sensitive receptors, who will be notified in advance.

4.10. Site Security

The security of the works areas will be the responsibility of the contractor(s) who will provide adequate security to prevent unauthorised entry to or exit from any working areas. As noted in Section 9.8.6 of Chapter 9 of the EIAR, Security for the works will be provided by a combination of:

- Secured work areas with fencing, with gate man and barrier controlling access to the fenced areas, at the grid facility site;
- Roving security patrol outside normal working hours; and
- CCTV.

As noted in section 9.8.3 of Chapter 9 of the EIAR, a site boundary in the form of temporary hoarding will be established around each of the temporary contractor compounds with hoarding or fencing used around each of the working areas. These will be established before any significant construction activity commences, as these construction sites can be an unsafe environment for those that have not received the proper training and are unfamiliar with construction operations.

For the temporary contractor compounds (HDD, grid facility, and cable contractor compounds), the hoarding will generally be a minimum 2m high in order to provide a secure boundary to prevent unauthorised access and delineate the works. The site hoarding will also perform an important function in relation to minimising nuisance and effects including:

- Noise emissions (by providing screening);
- Visual impact (by screening the working areas, plant and equipment); and
- Dust minimisation (by providing a buffer).

The hoarding/fencing will be typical of that used at 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.

As noted in section 9.8.4 of Chapter 9 of the EIAR, temporary site services will be installed in parallel with the rearrangement and diversion of existing utilities, where relevant. Eco-Cabins will be used to promote the most efficient use of resources for the temporary construction facilities for the onshore elements of the proposed development.

Electricity

The working areas will be powered by existing mains supplies, however where mains supply is not available, power will be provided via a diesel generator. Typically, one 20,000 litre tanker for the delivery of diesel to the site compounds will be required each week, suitable bunded storage facilities will be provided.

Drinking Water

Potable water will be supplied from Uisce Éireann mains where available. If not, potable water will be either transported via tanker to site or via large, recyclable bottles. Typically, one delivery each week will be required for the provision of potable water.

Grey Water

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

Wastewater

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.

Lighting

Site lighting will typically be provided by tower mounted temporary portable construction floodlights that will be cowled and angled downwards to minimise spillage to surrounding properties.

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.

4.11. Reinstatement and Landscaping

4.11.1. Landfall Site

Following completion of the HDD and jointing activities, all cabling and jointing infrastructure will be below ground. The only visible structures at the landfall will be two small manhole covers for each cable and small cable marker posts, which will indicate the location of the underground cables. There will also be a permanent access track to allow access to the TJBs.

4.11.2. Grid Facility

Following completion of the compensation substation and Bremore substation works at the grid facility site, the landscaping infrastructure and planting will be constructed and established in accordance with the details provided in the Onshore Description Chapter and on the landscape drawing 281240-MCR-ONS-GF-DR-YE-1010 in Appendix 7.1 of the EIAR. Where opportunities exist to establish elements of landscaping or planting early in the construction programme, these will be taken.

4.11.3. Onshore Cable Route

The cable corridor will be fully reinstated following the completion of works along the cable route.

Farmland will be reinstated to its original condition. Prior to the replacement of topsoil, the subsoil will be ripped to below the depth of compaction, if possible, and levelled, and any roots, stones, shale and rock will be removed. Topsoil will be replaced, and additional topsoil provided, if required. Grassland will be reseeded, in consultation with the landowner.

On completion of the works all temporary buildings, fences, roadways, surplus materials debris and materials not naturally belonging on the land will be removed. Some access tracks will be retained for ongoing maintenance and emergency access purposes, in the specific locations detailed on the planning drawings accompanying this planning application.

Where loss of hedgerows occurs, the hedgerow will be replanted where possible. To protect the cable and to provide future access to the cable corridor, there will be restrictions on the replanting of hedgerows directly over the cable trenches. At Blakes Cross, for the off-line section of cable at watercourse crossing (Wx11), there is a specific landscaping plan which will also be implemented, as detailed in the Onshore Description Chapter and on the landscaping plan, 281240-MCR-ONS-GF-DR-YE-1011 in Appendix 7.1 of the EIAR.

Along route sections where the onshore cable route is located within public roads, the removal of any trees or vegetation alongside the road will be avoided as much as practicable. Where habitat cannot 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. Further detail on this is provided in Volume 4, Chapter 23: Biodiversity. Refer also to Section 5 below which details the biodiversity mitigation measures.

On completion of the construction works and energisation of the project, the permanent wayleave will be 8m wide in third party lands. Future access to the joint bays in third party lands for annual inspection will be maintained via the construction of approximately 5m wide permanent access tracks to each joint bay location.

5. Schedule of Environmental Commitments

5.1. Introduction

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

This section will be updated with any further conditions or measures relating to onshore construction, as conditioned in the grant of consent.

5.2. Land and Soils

5.2.1. Construction Phase

The mitigation strategy outlined in this section will be implemented during the construction phase of the proposed development. The strategy will be incorporated into the overall Onshore Construction

Environment Management Plan (CEMP), which is included in Appendix 9.1 of the EIAR. The Onshore CEMP will be updated by the contractor prior to the commencement of construction.

5.2.1.1. General

Best construction management practice (daily site clean-ups, use of disposal bins, etc.) will be carried out at working areas 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 or leaks. Potential pollutants will also be adequately secured against vandalism and will be provided with proper containment according to codes of best practice. Any spillages or leaks will be immediately contained, and contaminated soil removed from site and disposed of in a licensed waste facility.

Potential soil and water pollution will be minimised by the implementation of best construction practices. Such practices will include adequate bunding for oil containers, wheel washers and dust suppression on site roads, and regular plant maintenance.

Best construction management practices, as outlined in the Construction Industry Research and Information Association (CIRIA) Control of Water Pollution from Construction Sites – Guidance for consultants and contractors (Masters-Williams et al. 2001) will be reflected in the CEMP.

An Emergency Response Plan has been prepared and included in the CEMP 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 Emergency Response Plan will address the following:

- 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
- All refuelling to take place in bunded enclosures and a minimum of 50m from any watercourse, or coastline. The only exception to this would be plant of limited mobility such as HDD rigs: for refuelling of these items, a small mobile fuel bowser will be used for refuelling, drip trays and plant nappies would be utilised to mitigate any potential spill of fuel during refuelling, and additional supervision employed
- Emergency spill kits will be retained at sensitive locations, with portable kits provided to plant and equipment operators
- 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 for review as required during and immediately following periods of heavy rainfall to minimise sediment generation and soil damage.

5.2.1.2. Mitigation of potential effects

Loss or damage of topsoil and subsoil

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.

Excavated topsoil 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.

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 through trafficking of any soil or subsoil which is not part of the works and intended to remain in-situ within the proposed development will be avoided.

The contractor will ensure that any excavated topsoil, subsoil or rock is assessed for re-use within the proposed development ensuring the appropriate handling, processing and segregation of the material. Where practical the removal of excavated material from the proposed development will be avoided. Any surplus suitable excavated material that is not required in the proposed development, will be reused on other projects where possible. The reuse of this material as a by-product on other construction sites would be subject to Article 27 notification to the EPA. This material would have to be shown to be suitable for such use and subject to appropriate control and testing according to earthworks specifications. Alternatively the surplus excavated material will be recovered at suitable authorised waste facilities.

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 and cable installation methodology have been selected to control ground settlement. The foundation types are described within Section 9.5 of the Onshore Construction chapter.

Excavation of Potentially Contaminated Land

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.

Samples of ground suspected of contamination will be tested for contamination during the detailed investigation and material 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.

Pollution of soil and groundwater

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.

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.
- 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.
- 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.

Landfall site, grid facility and onshore cable route

- Any groundwater or rainwater that collects in the HDD drilling pit or in a trench, or other excavation, will be pumped away onto adjacent land, not directly into waterways.
- Bentonite (or similar HDD drilling head lubrication material), which comprises 95% water and 5% bentonite clay which is a non-toxic, natural substance, will be used on site. It will be within a closed system, with drilling fluid recirculated, the drill cuttings recovered, and drilling fluid reused. Residual amounts of bentonite will be left in situ following the drilling process posing a negligible risk due to the inert nature of bentonite.
- In order to minimise 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.
- 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 onshore 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.

5.2.1.3. Monitoring during construction

As stated above, all excavations will be monitored in accordance with good practice and guidelines at the time of the works.

Any excavation and stockpiled material will be monitored to ensure the stability of slopes and to ensure that the materials designated for disposal are consistent with the descriptions and classifications according to the waste acceptance criteria testing carried out as part of the site investigations.

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.

5.3. Water

5.3.1. Construction Phase Mitigation Measures

As part of the proposed development, best practice construction methods will be implemented that will ensure the construction related effects are avoided or reduced to a minimum as much as practicable. This section outlines this best practice and or mitigation measures that will be implemented to mitigate the potential effects identified in Section 22.5 of Chapter 22.

5.3.1.1. Project Wide Mitigation Measures

Industry good practice guidance will be followed by the Contractor during construction including, where relevant, those listed in the guidance below:

- Construction Industry Research and Information Association (CIRIA), (2001). C532 Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors
- CIRIA, (2005). C650 Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site
- BPGCS005, Oil Storage Guidelines
- Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition projects, EPA (2021)
- Control of Water Pollution from Linear Construction Projects, CIRIA (C649)
- The SuDS Manual, CIRIA (C753)
- Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters, IFI (2016)
- The Management of Waste from National Road Construction Projects, GE-ENV-01101, TII (2017).

The Contractor will be required to put in place a Surface Water Management Plan (SWMP) to protect the water environment during construction. This will include all mitigation measures listed in this chapter and any other water related mitigation measures listed in other chapters including but not limited to the Biodiversity chapter, Land and Soils chapter etc.

5.3.1.2. Specific Mitigation and Monitoring Measures

Once the project-wide mitigation measures are implemented, other specific water pollution and flooding mitigation and / or monitoring measures include, but are not limited to those listed below:

Monitoring

- A suitably qualified Environmental Clerk of Works (EnCoW) and Ecological Clerk of Works (ECoW) will be appointed prior to commencement of works. The duties of these will be to monitor the efficacy of mitigation measures implemented by the contractors and to report on the application and success of these measures
- Water quality monitoring will be undertaken in advance of construction to establish baseline levels of potential contaminants in all watercourses across the proposed development
- At the watercourse crossing locations background samples (i.e. baseline) shall be collected in the same season as the construction will occur at that location to ensure the results are representative. This may mean that sampling is undertaken in the various watercourses at different times
- Upstream and downstream samples will be collected at each watercourse crossing location and will be tested for a range of parameters that occur naturally and for pollutants¹ including temperature, Electrical Conductivity (EC), pH, Dissolved Oxygen (DO), Turbidity, Total Petroleum Hydrocarbon (TPH) and Diesel Range Organics (DRO)
- Water pollution trigger levels will be determined against baseline monitoring results. The baseline monitoring results will present naturally occurring parameters. Any abnormally high concentrations monitored during construction will flag for construction to be stopped
- During construction of the watercourse crossings, field parameters (temperature, pH, turbidity, DO and EC) shall be monitored upstream and downstream of the construction works twice a day. Visual inspections of the watercourses at these locations will be conducted hourly during construction to identify any plumes of sediment or sheens of oil which may indicate spillages. If these are identified, works will stop until the source has been identified and remediated
- When there is construction on the same day at multiple watercourse crossing locations the ECoW is required to be present at instream works and designated person chosen by the contractor to do visual checks at the other watercourse crossings. Should the designated person observe a plume then they shall advise the ECoW and follow the mitigation measure above
- In the event of pollution occurring or the potential to occur, the EnCoW and ECoW have a 'Stop Works' authority to ensure measures to stop a pollution event are implemented immediately
- Post construction monitoring will be conducted for three months subsequent to construction

Prevention of release of hydrocarbons and contaminates

During construction the contractor will be required to implement the following specific mitigation measures to prevent the release of hydrocarbons, polluting chemicals, sediment/silt:

- Storage of sand/gravel/soil will be as far as practicable from watercourses or hydrological pathways to designated sites and grading adjacent to these stockpiles kept to a minimum

¹ According to CIRIA (2001) pollutants are defined as substances that occur either in a location where it is not naturally occurring or in an abnormally high concentration.

- Surface water run-off from temporary works area to be collected in silt/gravel traps prior to discharge to the surface water drainage network
- Silt fences (to Hy-TEX Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW
- All refuelling to take place in bunded enclosures and a minimum of 50m from any watercourse, or coastline. The only exception to this would be plant of limited mobility such as HDD rigs: for refuelling of these items, a small mobile fuel bowser will be used for refuelling, drip trays and plant nappies would be utilised to mitigate any potential spill of fuel during refuelling, and additional supervision employed
- Visual checks of the working areas and all silt/gravel traps will be carried out during weekly audits and maintenance works undertaken, if required
- All chemical/fuel etc. will be stored in bunded containers and all storage will have sufficient bunding for all liquids stored (110% of the capacity of the largest drum)
- Spill Kits will be maintained on sites and works areas
- The contractor will prepare a spill response procedure and implement it, if required
- Spill incidents will be reported to the EnCoW
- Oil interceptors will be installed on surface water drainage network at the grid facility works areas for the construction phase
- No foul sewer discharge will be allowed to enter the surface water drainage network; and
- Toolbox talks for all staff will be carried out by the contractor before work commences to identify environmental issues

Protection of watercourses

- For works occurring within 50m of an open watercourse, weather forecasts will be monitored prior to and during works to avoid working in adverse weather conditions such as heavy rains. No excavations for watercourse crossings will take place during a yellow, or higher, issued rain warning by Met Eireann
- All instream works will only take place during the permitted annual instream working window which runs from July to September (IFI, 2016), unless otherwise agreed with IFI.
- At the offline open cut trench crossings, the riverbed levels will be surveyed to allow them to be reprofiled back to their original condition at the completion of construction of the crossing
- Instream dewatered working zones, once construction is completed, will be reinstated with clean rounded river gravels of various sizes (30-100mm) and not the excavated material removed as this material will have become unstable and will release suspended solids if used

for reinstatement of the watercourse bed. Alternatively, the excavated material will be cleaned and reinstated

- Excavated material will be placed in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses
- An ECoW will be present for the entire duration of any instream works and monitoring will be conducted in line with the monitoring requirements above
- Settlement tanks, silt traps / bags and bunds will be used where required to remove silt from surface water runoff. Sizing of the tanks will be based on best available guidelines. Any construction work within a 10m buffer zone of the watercourse edge will be provided with these measures to minimise sediment discharge to a watercourse
- Where over pumping of water is required, flow will be discharged back to the same stream at a downstream location to maintain continuity and avoid flooding and water quality impacts to adjacent streams
- Dewatering, if required during excavation works, will be designed such that water will be adequately treated prior to discharge
- The existing drainage infrastructure will be surveyed where possible prior to construction. Land drains, open drains, drainage pipework or watercourses, affected by the works, will be maintained until completion of the works, and restored to their original condition. Where required, drainage will be temporarily diverted or over pumped, with appropriate water treatment as required. Further details are provided in Section 9.5.5 of the Onshore Construction chapter. Crossings will be undertaken following the methodology proposed in the Onshore Construction chapter and the drain or watercourse reinstated following to their original condition following construction
- All machinery will have been suitably serviced and inspected prior site delivery. A hydrocarbon/oil boom will be available at working areas for immediate deployment within any watercourse in the event of any hydrocarbon spillage at the site. A fuel spillage will be considered to be any loss of fuel, oil or lubricant, including hydraulic oil and spot leakage
- Deposition areas for spoil will be enclosed with silt fencing to prevent mobilisation of solids during adverse weather conditions and no drainage from these areas will be directed into the temporary drainage systems. A SuDS will be implemented to allow controls to be designed for the retention of large volumes of water that may arise from spoil deposition areas
- Silt traps and fencing to be placed in working areas that have the potential to carry silt laden material from the working area to aquatic environments. Silt traps and fences will not be erected within flowing watercourses as these can act as a barrier for movement of species
- Re-seeding of all areas of bare ground or the placement of jute matting will take place as soon as practicable to prevent run-off; and

- All onsite welfare facilities will be installed and managed as per regulations to prevent nutrient overloading of aquatic environments
- Mitigation measures in relation to soil stripping, earth removal, stockpiling are detailed in Section 21.6.1 of the Land and Soils chapter
- Where an open-cut watercourse crossing method is proposed at Wx13 (Ballyboghill Stream), which flows directly into the Rogerstown Estuary SAC and SPA, no in-stream works will occur within 150m of the SAC boundary.

Works to manage flooding

The contractor will be required to put in place a Flood Risk Management Plan (FRMP) to ensure staff are not exposed to the risk of flooding, to minimise damage to the construction works in case of flooding and to reduce risk of flooding to nearby properties. As part of the FRMP, the following will be included:

- The work near watercourses will be planned to be undertaken at appropriate periods when low flow is expected
- Weather warning notifications will be issued and the weather forecast checked regularly when working near areas at risk of flooding
- Where offline open cut trench method is proposed, water levels upstream of the watercourse crossings will be monitored
- A flood warning system and management plan will be implemented
- Further mitigation measures specific to each construction methodology are outlined below:
- Inline open cut trenches: Trenches will be excavated in short lengths and will be backfilled following installation of the ducts. Excavated material will be stockpiled outside areas at risk of flooding to prevent impoundment of water or changes to flow paths
- Inline HDD compounds: HDD compounds will be located where practicable outside the 0.1% AEP flood extents

Offline open cut crossing:

- With Over-pump Methodology: If expected flows in the watercourse are within the capacity of available pumps, temporary bunding and over-pumping methodology can be adopted. In that case, soil filled sandbags will be used to create a seal and bund both the upstream and downstream sides of the watercourse crossing. Then appropriately sized pumps will be located adjacent to the watercourse crossing, the intake pipe will be positioned upstream of the upstream bund and the discharge pipe downstream of the downstream bund, with appropriate water treatment provided in between, as required. The bunds, pump and treatment will be inspected daily.

- Water levels in the watercourse will be monitored to prevent flooding upstream of the bunds, back up pumps may be required. It is recommended that works are undertaken during low flows and avoided if a storm is expected
- With Culvert/Flume Pipe Methodology: In this method, the water flow will be diverted into a culvert or flume pipe to the side of the watercourse. The culvert/flume pipe watercourse crossing will be prepared by stripping the topsoil from the banks and areas adjacent to the river at the crossing point and storing it separately within the working area, away from the watercourse
- The excavated bank material and a selection of vegetation will be stored for replacement or reinstatement of the watercourse, after the cable ducts have been laid. A flume pipe bridge will be installed to one side of the watercourse channel. The culvert/flume pipe will be long enough to extend below the haul road to allow safe passage of plant and materials along the cable route. A suitably sized culvert/flume pipe will be installed at the crossing point. The invert of the culvert/flume pipe will typically be 100mm below the existing watercourse invert, to replicate natural free flow through the channel. The culvert/flume pipe will extend on the upstream and downstream sides of the crossing point for a suitable distance. The culvert/flume pipe will then be bedded and packed or surrounded with soil filled sandbags to create a seal or dam across the watercourse, to prevent scouring and to divert the water flow into the flume pipe. The flume pipe will take all the flow to the downstream side of the crossing point and the ducts will be installed beneath the dry watercourse channel
- Once the flume pipe or dam bund and over-pump method has been installed and sandbags are securely in place, the construction of the cable trench can proceed by excavating through the bed of the watercourse. Trench supports may be used to facilitate safe excavation and dewatering of the excavation area will be carried out if required. Final reinstatement will use the stored river-bed materials with reinforcement mesh included along with yellow marker warning tape.
- The banks of the temporary watercourse crossings will be reformed to their original profile. The excavated bed materials which had been removed for construction, and stored separately, will be reinstated to the original profile. The temporary flume pipe, packing and sand-bags will be removed once the watercourse profile has been reinstated, ensuring the correct sequencing of substrate reinstatement.
- Final bank reinstatement may require further measures to stabilise the banks and prevent erosion. 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 will comply with any conditions attached to the planning approval.
- The limited number of permanent access tracks proposed at offline crossings could potentially alter the flood mechanism at the watercourses if located within the floodplain. As

also outlined in Section 22.6.2, where reasonably possible, the tracks will be positioned outside the flood extents and designed to minimise changes to the existing ground. If encroaching within the floodplain, they will be constructed at-grade to prevent changes to flow paths or impoundment and will be made of semi-impermeable material (crushed stone) to mimic the natural infiltration potential of the existing land.

Protection from HDD Operations and Frac-Out

The contractor will 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.

- 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
- The contractor and the ECoW will monitor weather conditions 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 will be used to prevent overtopping
- 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

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 will not exceed those needed to penetrate the formation
- Exit and entry points for the HDD on land (exit point for landfall HDD is in the 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 be stopped 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
- 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.

In event of managing a breakout or frac-out, the following measures will be adopted:

- Drilling will be stopped immediately
- The bentonite will be contained by constructing a bund e.g. using sandbags
- The bentonite will be recovered 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
- Mud volumes and pressures will be checked and monitored as the works recommence
- In event of managing a breakout or frac-out under water, the following measures will be adopted
- The drilling will be stopped immediately
- Lost circulation material (mica), which will swell and plug any fissures, will be pumped into the bore
- Mud volumes and pressures will be checked and monitored as the works recommence
- The process will be repeated 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 the 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.
- On completion of the operation the drill fluid will be disposed of to an appropriately licensed facility.

5.4. Biodiversity

Mitigation provided at two key areas is shown on landscape plans and referred to in this section: one for the grid facility area (see planning drawing 281240_MCR_ONS_GF_DR_YE_1010 *Grid facility Landscape Plan* in Appendix 7.1 of Volume 8 of the EIAR) and one for Blakes Cross North (see planning drawing 281240_MCR_ONS_GF_DR_YE_1011 *Blakes Cross North Landscape Plan*, in Appendix 7.1). These plans show the combined landscaping and biodiversity mitigation proposals at these locations. A Habitat and Species Management Plan has been prepared for these areas to ensure the desired outcome for biodiversity is achieved, see Appendix 23.10 of Volume 10 of the EIAR.

5.4.1. Construction Phase

A suitably qualified Ecological Clerk of Works (ECoW) will be appointed to ensure the mitigation measures outlined in this section, in the Habitat and Species Management Plan (Appendix 23.10) and in Volume 8, Appendix 9.1: Onshore Construction Environmental Management Plan (CEMP) are implemented during the construction phase of the onshore infrastructure of the proposed development.

The appointed ECoW will deliver a toolbox talk to all contractors, including sub-contractors, prior to construction starting on ecologically sensitive features within or in close proximity to the works area. The duties of the ECoW will be to monitor the efficacy of mitigation measures implemented by the contractors and to report on the application and success of these measures. In the event of pollution occurring or the potential to occur, the ECoW will have a 'Stop Works' authority to ensure measures to stop a pollution event are implemented immediately.

5.4.1.1. Designated Sites

Measures to mitigate against downstream water quality impacts

Best practice guidelines during construction

The following measures will be implemented by the contractor to ensure the protection of downstream waters and habitats in European and nationally designated sites. The measures have been based on the following best practice guidelines to ensure that water bodies are adequately protected during construction work:

- Construction Industry Research and Information Association (CIRIA), (2001). C532 Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA, (2005). C650 Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site.
- BPGCS005, Oil Storage Guidelines.
- CIRIA, (2007). C697 The SUDS Manual.
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004.
- CIRIA, (2006). C648 Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006).
- CIRIA, (2006). C648 Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006).
- Inland Fisheries Ireland (IFI), (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters; and
- Fisheries Protection during Development Works (Foyle and Carlingford areas) Environmental Guidelines Series – No. 1. Loughs Agency.

Release of hydrocarbons and contaminates

The contractor will be required to implement the following standard practice construction methods and mitigation measures for release of hydrocarbons, polluting chemicals, sediment/silt, and contaminated waters control:

- Storage of sand/gravel/soil will be kept away from watercourses or hydrological pathways to designated sites and grading adjacent to these kept to a minimum.
- Surface water run-off from temporary works area to be collected in silt/gravel traps prior to discharge to the surface water drainage network
- Silt fences (to Hy-Tex Premium specification or similar) and silt traps will be installed prior to commencement of works and will be inspected daily to inform adaptive management as required. The locations of same will be determined by the EnCoW
- All refuelling to take place in bunded enclosures and a minimum of 50m from any watercourse, or coastline. The only exception to this would be plant of limited mobility such as HDD rigs: for refuelling of these items, a small mobile fuel bowser will be used for refuelling, drip trays and plant nappies would be utilised to mitigate any potential spill of fuel during refuelling, and additional supervision employed
- Visual checks of the working areas and all silt/gravel traps carried out during weekly audits and maintenance procedures applied
- All chemical/fuel etc. will be stored in bunded containers and storage to have sufficient bunding for all liquids stored (110% of the capacity of the largest drum)
- Spill Kits will be maintained on sites and works areas
- Implementation of the spill response procedure
- Spill incidents to be reported
- The contractor will prepare a spill response procedure and implement it, if required
- Spill incidents will be reported to the EnCoW
- Oil interceptors to be installed on surface water drainage network at the grid facility works areas for the construction phase
- No foul sewer discharge to enter the surface water drainage network; and
- Toolbox talks to be carried out by contractor with all staff before work commences to identify environmental issues.

Protection of watercourses

The contractor will be required to implement the following standard practice construction methods and mitigation measures for in-stream or near-stream works:

- For works occurring within 50m of a watercourse, weather forecasts will be monitored prior to and during works to avoid working in adverse weather conditions such as heavy rains. No excavations

for watercourse crossings to take place during a yellow rain warning or higher issued by Met Eireann.

- All instream works will only take place during the permitted annual instream working window which runs from July to September (IFI, 2016), unless otherwise agreed with IFI.
- At the offline open cut trench crossings, the riverbed levels will be surveyed to allow them to be reprofiled back to their original condition at the completion of construction of the crossing
- Instream dewatered working zones, once construction is completed, will be reinstated with clean rounded river gravels of various sizes (30-100mm) and not the excavated material removed as this material will have become unstable and will release suspended solids if used for reinstatement of the watercourse bed. Alternatively, the excavated material will be cleaned and reinstated
- Excavated material will be placed in such a way as to avoid any disturbance of areas near to the banks of watercourses and any spillage into the watercourses
- An ECoW will be present for the entire duration of any instream works and monitoring will be conducted in line with the monitoring requirements set out in the Water chapter.
- During instream works at offline open cut watercourse crossings, no materials, tools or machinery with the potential to cause pollution will be left within the dry works area outside of working hours. This will avoid a potential pollution event in the event of water entering the dry working area overnight.
- Instream dewatered working zones, once construction is completed, will be reinstated with clean rounded river gravels of various sizes (30-100mm) and not the excavated material removed as this material will have become unstable and will release suspended solids if used for reinstatement of the watercourse bed. Alternatively, the excavated material will be cleaned and reinstated
- No crossing of watercourses by machinery outside of the working footprint unless within the dewatered, dry working area.
- All outflows from drainage associated with construction activities will be treated through temporary settlement ponds prior to release and will be released by diffuse overland drainage at appropriate locations.
- Refuelling of machinery will take place in bunded enclosures, at a minimum of 50m away from watercourses or coastlines to prevent runoff into nearby watercourses. All machinery must carry on onboard spill kit in the event of oil/ fuel spill during all phases.
- The only exception to refuelling within 50m of a watercourse or coastline, would be plant of limited mobility, such as HDD rigs: for refuelling of these items, a small capacity double-skinned fuel bowser will be used for refuelling. Drip trays and plant nappies would be utilised to mitigate any potential spill of fuel and the refuelling process supervised both at the bowser and at the plant item.
- A complete mechanical check of all hoses and fluid reservoirs of machinery will be carried out by a competent member of the construction team before machinery arrives to site.

- A hydrocarbon oil boom will be available at working areas for immediate deployment within any watercourse in the event of any hydrocarbon spillage at the site. A fuel spillage will be considered to be any loss of fuel, oil or lubricant, including hydraulic oil and spot leakage.
- To reduce the amount of silt laden water to be treated, clean water drains will be created to divert water away from dirty water and construction areas, this will lessen the volume of water to be treated onsite.
- The extent of open excavations along the onshore cable route will be kept to a practical minimum, e.g. do not excavate the entire onshore cable route as this acts as a pathway for the mobilisation of suspended solids.
- Deposition areas for spoil will be enclosed with silt fencing to prevent mobilisation of solids during adverse weather conditions and no drainage from these areas will be directed into the temporary drainage systems. A Sustainable Urban Drainage System (SUDS) will be implemented to allow controls to be designed for the retention of large volumes of water that may arise from spoil deposition areas.
- Silt traps and fencing will be placed in working areas that have the potential to carry silt laden material from the working area to aquatic environments. Silt traps and fences will not be erected within flowing watercourses as these can act as a barrier for movement of species.
- Re-seeding of all areas of bare ground or the placement of jute matting will take place as soon as practicable to prevent run-off; and
- All onsite welfare facilities will be installed and managed as per regulations to prevent nutrient overloading of aquatic environments.

Protection from HDD Operations and Frac-Out

The contractor will be required to implement the following standard practice construction methods and mitigation measures for HDD operations and frac-out:

- The contractor will 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.
- Any groundwater or rainwater that collects in the HDD drilling pit will be pumped away. Then it will be discharged through a filter medium onto the adjacent land, not directly into a waterway. This will avoid the build-up of silt, as some granular material will, inevitably, be pumped out with the water from the pit.
- The contractor and the ECoW will monitor weather conditions 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.
- Any bentonite, which comprises 95% water and 5% bentonite clay which is a non-toxic, natural substance, (or similar HDD drilling head lubrication material) will be handled and removed by the drilling contractor.

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 (entry point for landfall HDD is on the 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.
- While the bentonite drilling fluid is non-toxic, 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.

In event of managing a breakout or frac-out on land, the following measures will be adopted:

- 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.

In event of managing a breakout or frac-out under water, the following measures will be adopted:

- 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.
- Any bentonite will be managed and removed by the specialist drilling contractor on completion of the operation.
- The total volume of water required is estimated to be up to 1,000m³ for each land-based HDD bore, and for the landfall, the volume of water would be approximately 4,500m³ per HDD bore. 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.

- On completion of the operation the drill fluid will be disposed of to an appropriately licensed facility.

Protection of the Rogerstown Estuary SAC at Wx13

Where an open-cut watercourse crossing method is proposed at Wx13 (Ballyboghill Stream), which flows directly into the Rogerstown Estuary SAC and SPA, no in-stream works will occur within 150m of the SAC boundary.

Full watercourse protection measures for in-stream works, as outlined in the above sections for protection of downstream water quality and watercourses will be adhered to.

Measures to mitigate against dust impacts

The contractor will be required to implement the following standard practice construction methods and mitigation measures for release of dust:

Preparing and maintaining the site

- Plan construction compound 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 all construction/ contractor compounds.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Cover, seed or fence stockpiles to prevent wind whipping.

Construction Plant Operations

- Ensure an adequate water supply on the working areas for effective dust/particulate matter suppression/mitigation.
- Use enclosed chutes where possible 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.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Measures specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Measures specific to Track-out

- Ensure no mud or debris accumulates on the public road and public roads are clean of any mud, dust or debris by suitable means. 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 when transporting materials that are likely to generate dust to prevent escape during transport.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

Measures specific to the grid facility construction activities are:

- 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 grid facility 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.

Measures to be applied at the Malahide Estuary and the Landfall site

- Erect a 2m minimum site hoarding around the working areas adjacent to the Malahide Estuary (Estuary Road) and where works are in proximity to the North West Irish Sea cSPA.

Measures to mitigate against disturbance impacts on SCI wintering waterbirds

- Mitigation measures set out in Section 5.4.1.10 for wintering waterbirds will be implemented for the protection of SCI wintering waterbirds from disturbance.

5.4.1.2. Habitats

Measures to mitigate against habitat degradation and water quality impacts on lowland depositing rivers

Standard practice construction methods and mitigation measures set out in Section 5.4.1.1 for protection of watercourses will be implemented to minimise and reduce impacts on lowland depositing rivers.

Measures to protect lowland depositing rivers from HDD Operations and Frac-Out

Standard practice construction methods and mitigation measures set out in Section 5.4.1.1 for protection from HDD operations and frac-out, will be implemented to minimise and reduce impacts on lowland depositing rivers.

Measures to mitigate against habitat loss of hedgerows and trees/treelines

Hedgerow planting to be located around the periphery of the grid facility and at Blakes Cross North will supplement existing hedgerows where appropriate. The total length of new hedgerow planting at the grid facility will be 166m. Areas of supplementary hedgerow planting at Blakes Cross North will mirror existing

hedgerows within the onshore development area to create double hedgerows and total 400m. Hedgerow planting will include the following species *Alnus glutinosa*, *Prunus spinosa*, *Ilex aquifolium*, *Rubus fruticosus*, *Corylus avellana*, *Rosa canina*, *Euonymus europaeus* and *Crataegus monogyna*.

Trees and woodland will be planted around the periphery of the grid facility. This planting area will measure a total 8,325m². Tree planting will include *Alnus glutinosa*, *Betula pubescens*, *Ilex aquifolium*, *Pinus sylvestris*, *Prunus padus*, *Prunus avium* and *Quercus robur*. This planting will have an understory and shrub planting of *Prunus spinosa*, *Rosa canina* and *Euonymus europaeus*.

Replanting will be in place at the earliest opportunity after the commencement of construction works, to facilitate early establishment/growth, but will not be put at risk of accidental damage due to ongoing construction works (e.g., machinery movement, material storage).

To enhance the biodiversity potential of hedgerow and tree planting, management measures will be undertaken which are outlined under the Biodiversity Enhancement section below and are described in the Habitat and Species Management Plan (see Appendix 23.10).

Measures to mitigate against habitat degradation of hedgerows and trees/treelines

Where works are occurring in close proximity to hedgerows, temporary and permanent access tracks will not be sited within 3m from the edge of the hedgerow vegetation, unless existing tracks in such locations are being utilised. Where existing agricultural tracks are present at the landfall, and other offline locations, these tracks will be used by traffic associated with the works. No other construction works or activities will be located within 5m of the hedgerow vegetation.

Under supervision of the ECoW, where works occur within close proximity to trees, e.g. at watercourse crossing Wx22 Sluice Stream, a root protection zone will be implemented at specific locations to protect trees from indirect damage to their root network.

Measures to avoid disturbance and damage to breeding birds during vegetation removal

In order to avoid disturbance to breeding birds, their nests, eggs and/or their unflown young, as protected under the Wildlife Acts, all works involving the removal of vegetation, not just trees and hedgerows but also grassland habitat suitable for ground nesting birds, will be undertaken outside of the breeding bird nesting season (1 March to 31 August inclusive). Only where seasonal restrictions cannot be met, see measures set out in Section 5.4.1.9 to protect breeding birds.

Measures to avoid dispersal of Non-native Invasive Species

Medium and high impact invasive species such as cherry laurel, butterfly bush, rock cotoneaster and Himalayan honeysuckle were recorded within the onshore development area, mainly within hedgerows and treelines. Where these terrestrial non-native invasive species not listed on the Third Schedule are present, vegetation will be removed and will be disposed of appropriately. Cherry laurel occurs in several hedgerows within the onshore development area and is a high impact invasive species in Ireland. Methods of removal include chemical treatment by a licensed contractor, or mechanical/physical

treatment. Any invasive species plant material that is removed will be disposed of at an appropriate licenced waste facilitator.

See Appendix 23.10 Habitat and Species Management Plan for prescriptive detail on invasives species management methods and treatment.

Pre-construction surveys will be undertaken along the onshore cable route, at each offline section, and where works are proposed in close proximity to recorded of non-native invasive species. Appropriate avoidance and treatment measures will be taken if there is a risk of encountering non-native invasive species, with attention to Third Schedule species.

While Himalayan balsam does not occur within the onshore development area. Treatment measures including methods of mechanical/physical or chemical² for Himalayan balsam are included in the Habitat and Species Management Plan (Appendix 23.10).

5.4.1.3. Habitat Enhancement

No likely significant effects have been identified as a result of the construction phase on grassland habitats. While mitigation measures are therefore not required to reduce a likely significant effect, the below habitat enhancement measures will that ensure habitat enhancement at the grid facility and Blakes Cross North is maximised through careful consideration of the planting scheme. The following biodiversity planting has been proposed and will be managed as outlined here and in Appendix 23.10 Habitat and Species Management Plan, to maximise its biodiversity potential for the widest range of species.

Natural reseeding method for semi-natural grasslands

Reseeding of grassland habitats will be implemented using hay transfer. This is an effective near-natural solution for grassland restoration³ which avoids importing a seed mix and instead utilises the existing seed bank and seed resource. Adjacent, or nearby, grassland similar to the grassland that is being removed will be cut when grasses and flowering plants are in seed. These cuttings will be laid over the reinstated bare ground for natural colonisation. This method will be used, but not limited to, the following scenarios: at the margins of arable and agricultural grassland fields, at field boundaries where drainage ditches and hedgerows are crossed, at watercourse riparian edges if HDD has not been used and at temporary compound locations where semi-natural grassland is present.

See Appendix 23.10 Habitat and Species Management Plan for prescriptive details on reseeding methods.

² Invasive Species Ireland. Best Practice Management Guidelines for Himalayan Balsam (*Impatiens glandulifera*). Available at: <https://invasivespeciesireland.com/wp-content/uploads/2012/01/Himalayan-Balsam-BPM.pdf> [Accessed February 2023]

³ Orsolya Valko, O., Radai, Z. and Deak, B. (2022) Hay transfer is a nature-based and sustainable solution for restoring grassland biodiversity. Journal of Environmental Management Vol. 311

Habitat enhancement for semi-natural grasslands

A species rich grassland mix will be used in appropriate grassland areas of the grid facility in an area of 33,483m². At Blakes Cross North an additional area of species rich grassland will be sown, measuring 5,500m².

The species rich grassland seed mix will include the species as listed, or a similar native grassland seed mix: *Festuca pratensis*, *Festuca ovina*, *Lolium preenne* L., *Festuca rubra*, *Festuca rubra subsp. Commutate*, *Poa pratensis*, *Poa trivialis*, *Alopecurus pratensis*, *Phelum pratense*, *Plantago lanceolata*, *Prunella vulgaris*, *Achillea millefolium*, *Daucus carota*, *Leucanthemum vulgare*, *Galium verum*, *Rumex acetosella*, *Lotus corniculatus*, *Rhinanthus minor*, *Trifolium repens* and *Trifolium pratense*, *Centaurea nigra*, *Hypochoeris radicata*, *Anthriscus sylvestris*, *Vicia sepium*, *Lathyrus pratensis*, *Conopodium majus*.

In addition, the attenuation basin in the grid facility, which will be infrequently wet depending on rainfall levels, will be planted with a riparian grass and herb mix. The planted area will measure a total area of 6,411m². This species rich grassland mix will include important food plants for the butterflies and invertebrates and will benefit foraging bats and birds. This riparian grass and herb mix will include the following species as listed, or a similar native species mix: *Juncus effusus*, *Ranunculus peltatus*, *Sagittaria sagittifolia*, *Potamogeton natans*, *Mentha aquatica*, *Ceratophyllum demersum*, *Glyceria maxima*, *Hydrocharis morus-rane*, *Sparganium erectum*, *Berula erecta*, *Filipendula ulmaria*, *Callitriche platycarpa*, *Lychnis flos-cuculi*, *Myosotis scorpiodes*, *Iris pseudacorus*, *Alisma plantago-aquatica*, *Althaea officinalis*, *Berula erecta*, *Filipendula ulmaria*, *Mentha aquatica*, *Glyceria fluitans*, *Lychnis flos-cuculi*, *Myosotis scorpiodes*, *Iris pseudacorus*, *Alisma plantago-aquatica*, *Althaea officinalis*.

Areas of seeded grassland will be managed through a once or twice annual mowing regime, whereby mowing is undertaken outside of the breeding bird period (1 March to 31 August). Cuttings will be removed from the site after each mow. Strips will also be left unmown with seed heads intact for the winter period providing a winter food resource for birds.

Insecticides and herbicides will not be used to manage habitats, with the exception of the treatment of non-native invasive species.

See Appendix 23.10 Habitat and Species Management Plan for details on management of grassland to enhance the biodiversity potential.

Habitat enhancement for hedgerow and trees

Hedgerow planting will be located around the periphery of the grid facility and at Blakes Cross North, which will supplement existing hedgerows where appropriate. The total length of new hedgerow planting at the grid facility will measure a distance of 166m. Areas of supplementary hedgerow planting at Blakes Cross North will mirror existing hedgerows within the onshore development area to create double hedgerows and total 400m. Hedgerow planting will include the following species *Alnus glutinosa*, *Prunus spinosa*, *Ilex aquifolium*, *Rubus fruticosus*, *Corylus avellana*, *Rosa canina*, *Euonymus europaeus* and *Crataegus monogyna*.

Trees and woodland will be planted around the periphery of the grid. This planting area will measure a total 8,325m². Tree planting will include *Alnus glutinosa*, *Betula pubescens*, *Ilex aquifolium*, *Pinus sylvestris*,

Prunus padus, Prunus avium and Quercus robur. This planting will have an understory and shrub planting of *Prunus spinosa, Rosa canina and Euonymus europaeus*.

Leaf litter and fallen branches will not be removed from the understory of the woodland to create habitat for invertebrates, which will also be utilised by mammals.

Insecticides and herbicides will not be used to manage habitats, with the exception of treatment of non-native invasive species.

See Appendix 23.10 Habitat and Species Management Plan for details on management of hedgerows and tree planting to enhance the biodiversity potential.

5.4.1.4. Annex 1 Habitats

Mitigation measure to ensure protection of Annex 1 habitats at the landfall site

An exclusion zone of 50m will be implemented at the coastline to ensure there is no accidental damage or unnecessary trampling of these sensitive habitats. Demarcation of the exclusion zone will be implemented at the landward side of the landfall site, and the seaward side if necessary. No works will occur within this exclusion zone.

5.4.1.5. Terrestrial Mammals

Mitigation measure to ensure protection of badger setts from disturbance

While no badger setts were confirmed within the onshore development area during baseline ecological surveys, as mammals are mobile species and can move into new areas over time, pre-construction surveys for badger will be undertaken at offline sections which contain suitable habitat for setts.

For any setts identified during pre-construction surveys within 150m of the onshore development area, monitoring will be undertaken using trail cameras to confirm the status of the sett in line with NRA (2006a) guidelines. If any sett occurring within 150m is confirmed to be a breeding sett, no works will occur within 50m of the sett during the badger breeding period (1 December to 30 June). A 50m exclusion zone will be implemented and demarcated to ensure protection of any sett occurring within 50m from disturbance during the construction phase. Additionally, if any sett is confirmed to be a breeding sett no piling or blasting will occur within a 150m exclusion zone during the breeding period (1 December to 30 June).

5.4.1.6. Otter

Mitigation measure to ensure protection of otter from disturbance

No evidence of otter was recorded within the ecological study area. However, given their mobile nature pre-construction surveys will be undertaken at watercourse crossing and at the landfall site where suitable habitat for otter is present to ensure no holts or resting places occupy the works area and 150m either side of the works area. Pre-construction surveys for otter will be undertaken in line with NRA guidelines (2008).

Mitigation measure to ensure protection of otter from lighting impacts

Artificial lighting associated with construction activities and placed at the landfall site and at watercourse crossings will be of a design that limits light spill beyond the working areas. The ECoW will be consulted to ensure that lighting at the construction compounds and in active working areas, which are in close proximity to watercourses and the landfall site, will minimise light spill on habitats used by otter.

Some, or all, of the below mitigation measures will be employed to reduce light spill where necessary:

- The use of sensor / timer triggered lighting.
- LED luminaires to be used where practicable due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- Column heights to be considered to minimise light spill.
- Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only where needed; and
- Where night-time works are required, the appointed contractor will liaise with the engaged suitably experienced and qualified ecologist(s) and implement measures to mitigate the impact of such works on otter.

Mitigation measures to ensure protection of otter from water quality impacts

Mitigation measures set out in Section 5.4.1.1 for protection of downstream water quality will be implemented for the protection of otter from water quality impacts.

5.4.1.7. Amphibian & Reptiles

Mitigation measure to ensure protection of amphibians from habitat loss

No evidence of amphibians was recorded within the ecological study area. However, given their mobile nature, for works occurring in suitable breeding habitat for amphibians during the period February to March, pre-construction surveys will be undertaken to avoid mortality to breeding common frog or smooth newt. If either are confirmed to breed within the onshore development area, consultation with the NPWS will be undertaken and if deemed necessary a translocation licence application will be submitted.

Mitigation measures to ensure protection of amphibians from water quality impacts

Standard practice construction methods and mitigation measures set out in Section 5.4.1.1 for protection of downstream water quality will be implemented for the protection of amphibians from water quality impacts.

5.4.1.8. Bats

Mitigation measures to ensure protection of bats from lighting impacts

Floodlighting associated with construction activities will be of a design that limits light spill beyond the working areas. The ECoW will be consulted to ensure that lighting at the construction compounds and in active working areas, which are in close proximity to watercourses, hedgerows and treelines, and the landfall site, will be designed to minimise light spill onto habitats used by bats reducing any impacts to foraging or commuting bats.

Some, or all, of the below mitigation measures will be employed to reduce light spill where necessary:

- The use of sensor / timer triggered lighting.
- LED luminaires to be used where practicable due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- Column heights to be considered to minimise light spill.
- Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only where needed; and
- Where night-time works are required, the appointed contractor will liaise with the engaged suitably experienced and qualified ecologist(s) to implement the measures outlined in the above bullet points to mitigate the impact of such works on bats.

Mitigation measures to ensure protection of bats from loss of roosts

No tree roosts were confirmed during surveys within the ecological study area. Where practicable, tree removal, especially of trees that have been identified as Potential Roost Features (PRFs), will be avoided through micro-siting of the cable route and in consultation with the ECoW.

Where avoidance is not practicable, prior to removal of PRF trees, all trees that were confirmed as having potential for roosting bats will be re-examined immediately prior to their removal to assess whether bats are present. Pre-construction surveys will be undertaken as set out below:

- Low suitability trees will be subject to a visual inspection at height using an endoscope. If no bats are confirmed to use the tree it will be felled on the same day using sectional felling or soft felling technique. Limbs and tree sections will be left *in situ* on the ground for at least 24 hours before they are processed, to allow any bats to fly out.
- Trees of moderate suitability or higher will be subject to a roost emergence and re-entry survey to confirm there are no bats using the tree prior to felling. If no bats are found to use the tree, it will be felled on the same day using sectional felling or soft felling technique. Limbs and tree sections will be left *in situ* on the ground for at least 24 hours before they are processed, to allow any bats to fly out.
- For trees identified as having moderate PRF suitability, which could be used as a maternity roost, these will be felled during the period March-April and/or October-early November which is outside the maternity season and when bats are capable of flight.

- For trees identified as having low PRF suitability, subject to visual inspection as outlined above, these trees can be felled during the period March to early November as there is an unlikely risk of these features having suitability to hold a maternity roost.

To minimise habitat loss due to the removal of PRF trees and areas of treeline, bat boxes to the specification of a woodcrete box intended for bats that normally reside in tree cavities⁴, or similar, will be installed in appropriate locations within lands under the control of the applicant, including lands at the grid facility and Blakes Cross North. A variety of types of bat boxes will be erected to provide bats with alternatives and a variety of conditions. Bat boxes will be installed by a suitably qualified ecologist, or the project ECoW.

5.4.1.9. Breeding Birds

Mitigation measures to ensure protection of breeding birds from disturbance

In order to avoid disturbance of breeding birds, their nests, eggs and/or their unflown young, as protected under the Wildlife Acts, all works involving the removal of vegetation within the onshore development area, not just trees and hedgerows but also grassland habitat suitable for ground nesting birds, will be undertaken outside of the breeding bird nesting season (1 March to 31 August inclusive).

Only where this seasonal restriction cannot be observed, a breeding bird survey will be undertaken during the appropriate survey season (between early March and late June, and as late as August for late nesting birds) by an ecologist with experience undertaking breeding bird surveys in order to confirm whether birds are nesting within suitable habitat affected by or immediately adjacent to. Where nesting birds are encountered during surveys, the removal of trees, hedgerows or suitable grassland habitat will be delayed until after the nesting season (1 March to 31 August inclusive).

Mitigation measures to ensure protection of yellowhammer from habitat loss

Habitat enhancement at the grid facility for yellowhammer will include a suitable nesting habitat, summer food resource and winter food resource. Nesting habitat will include new hedgerow planting and supplementary planting at existing periphery hedgerows with an adjacent grassland margin which will be under a minimal management regime. A pollinator/wildflower grass mix will support invertebrate populations and provide a summer food resource for yellowhammer. Unmown grass strips will be left with seed heads intact for the winter period providing a food resource for yellowhammer.

At Blakes Cross North, hedgerow enhancement for yellowhammer will consist of planting a double hedgerow immediately adjacent to existing hedgerows.

Hedgerows and marginal grassland will not be cut during the breeding bird season (1 March to 31 August inclusive). Only where this seasonal restriction cannot be observed, a thorough breeding bird survey and nest check will be undertaken by an ecologist with experience undertaking breeding bird surveys in order

⁴ An example of such a box is 'The Convex Bat Box is a woodcrete box intended for bats that normally reside in tree cavities, it has two access options, one at the front and one at the bottom allowing bats to land on the tree and crawl inside.' Available at: <https://www.wildcare.co.uk/convex-bat-box.html>

to confirm the presence of breeding yellowhammer within suitable habitat affected by or immediately adjacent to vegetation removal. Where displaying yellowhammer or nesting birds are encountered during surveys, the removal of trees, hedgerows or suitable grassland habitat will be delayed until after the nesting season (1 March to 31 August inclusive). Yellowhammer can breed late in the season so the delay until after period must be strictly adhered to.

See Appendix 23.10 of Volume 10 of EIAR - Habitat and Species Management Plan for details on management of habitats for yellowhammer.

Mitigation measures to ensure protection of meadow pipit from habitat loss

Habitat enhancement at the grid facility will provide a summer and winter food resource for meadow pipits. As meadow pipits are ground nesting birds, grassland margins and semi-natural grassland planting at the grid facility and Blakes Cross North managed under a minimal management regime, will develop into suitable nesting habitat in the form of grassland tussocks. A pollinator/wildflower grass mix will support invertebrate populations and provide a summer food resource for meadow pipit. Unmown grass strips will be left with seed heads intact for the winter period providing a food resource.

Grassland will not be cut during the breeding bird season (1 March to 31 August inclusive). Only where this seasonal restriction cannot be observed, a thorough breeding bird survey and nest check will be undertaken by an ecologist with experience undertaking breeding bird surveys in order to confirm the presence of breeding meadow pipit within suitable habitat affected by or immediately adjacent to the area of vegetation removal. Where displaying meadow pipit or nesting birds are encountered during surveys, the removal of suitable grassland habitat will be delayed until after the nesting season (1 March to 31 August inclusive).

See Appendix 23.10 Habitat and Species Management Plan for details on management of habitats for meadow pipit.

5.4.1.10. Wintering Waterbirds

Mitigation measures to ensure protection of wintering waterbirds from lighting impacts

Construction lighting used during months August to March will be reviewed by the project ECoW. Construction lighting in areas at the landfall site and Malahide Estuary will be kept to a minimum where practicable and will be directed away from habitats utilised by wintering waterbirds to minimise light spill and avoid disturbance.

Some, or all, of the below mitigation measures will be employed to reduce light spill where necessary

- The use of sensor / timer triggered lighting.
- LED luminaires to be used where practicable due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- Column heights to be considered to minimise light spill.

- Accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only where needed; and
- Where night-time works are required, the appointed contractor will liaise with the ECoW and implement measures outlined in the bullet points above to mitigate the impact of such works on wintering birds.

Mitigation measures to avoid disturbance impacts on wintering waterbirds

At the landfall site, the HDD compounds near the shoreline will have noise barriers on the northerly, easterly and southerly perimeters, to reduce noise levels in these directions.

At Malahide Estuary, the first measure will be to avoid works along the Estuary Road during the period September to March when wintering birds are present.

Where this is not practicable, for works at Malahide Estuary during the period September to March, noise barriers will line the works area within the Estuary Road on the estuary side to protect wintering waterbirds utilising the nearest estuarine habitats.

In addition, the temporary noise barriers at the landfall site and at Malahide Estuary along the Estuary Road will act as a visual barrier and reduce disturbance impacts and potential likely effects on wintering waterbirds.

An ECoW will be present during all works along the Estuary Road.

Toolbox talks will be delivered by the appointed ECoW to all construction staff on the sensitivity of wintering waterbirds at the landfall site and at Malahide Estuary.

Mitigation measures to ensure protection of wintering waterbirds from water quality impacts

Standard practice construction methods and mitigation measures set out in Section 5.4.1.1 1 for protection of downstream water quality will be implemented for the protection of wintering waterbirds from water quality impacts.

5.4.1.11. Aquatic & Fisheries

Measures to mitigation against impacts on watercourses

Standard practice construction methods and mitigation measures set out in Section 5.4.1.1 and 5.4.1.4, for the protection of lowland depositing rivers and downstream water quality, will be implemented for the protection of aquatic features and fisheries.

Measures to protect from HDD Operations and Frac-Out

Standard practice construction methods and mitigation measures set out in Section 5.4.1.1 for protection of downstream water quality, including protection from HDD operations and frac-out, will be implemented for the protection of aquatic features and fisheries from water quality impacts.

Measures to protect fish and aquatic species during instream works

The contractor will be required to implement the following standard practice construction methods and mitigation measures for in-stream works:

- All personnel must ensure strict bio-security measures are employed prior to any contact of equipment with the aquatic environment, as per Inland Fisheries Ireland (IFI) guidance⁵ and detailed below. On completion of work in freshwater habitats the following procedures will be undertaken (where relevant).
- Visual inspection of all equipment that has come in to contact with water for evidence of attached plant or animal material or other substances.
- Removal of any identified plant or animal material or other substances before leaving the operation site.
- Ensure that all water will be drained from boats and other water retaining equipment before transportation elsewhere.
- High-pressure steam cleaning with water >40 degrees C will be undertaken on all boats and associated equipment (this facility is available at a number of roadside garages). After this cleaning, a further visual inspection will be undertaken. Disinfectant will be applied to the undercarriage and wheels of the vehicle and trailer after this cleaning has taken place.
- Any wet or live wells and other retaining compartments in survey boats will be cleaned with a 1% solution of Virkon Aquatic or another proprietary disinfection product and rinsed with water.
- Outboard motors will be flushed with a 1% solution of Virkon Aquatic or another proprietary disinfection product, or with water > 40 degrees C.
- Nets (to include monofilament and braided gill nets, fyke nets and seine nets) will be cleaned of all vegetation and debris before returning to base. The clean nets will be placed in a freezer for a period of four days (3 days will suffice for monofilament nets). Following this treatment, the nets will be soaked in a 1% solution of Virkon Aquatic or a proprietary disinfectant for a period of not less than 15 minutes and thoroughly rinsed thereafter.
- Footwear will be dipped in or scrubbed with a disinfectant solution (e.g. 1% solution of Virkon Aquatic or another proprietary disinfection product) and thoroughly dried afterwards.
- All personal protective equipment (PPE) will be visually inspected, and any attached vegetation or debris removed. Where appropriate, the gear will be wiped down with a cloth soaked in 1% solution of Virkon Aquatic or another proprietary disinfection product.
- Sampling equipment (e.g. electrofishing electrodes and cable, grab samplers, meter sticks, buckets and bins, etc.) will be cleaned, rinsed or wiped down with or dipped in a suitable disinfectant solution.

⁵ Available at: https://www.fisheriesireland.ie/sites/default/files/2021-06/research_biosecurity_biosecurity_for_fieldsurveys_2010.pdf [Accessed January 2023]

- Landing nets and hand nets will be dipped in disinfectant solution and rinsed in clean water.
- Once the dams are constructed for the creation of any instream working areas, translocation of any fish trapped within the dammed channel will take place before total dewatering of the works area starts. If the area is too deep for electrofishing, then dewatering will begin in a controlled manner to reach a preferred water height where electrofishing can take place. Translocation of fish will be through the method of electrofishing by a competent operator and the placement of captured fish will be upstream of the works. Electrofishing will be conducted under an authorisation under Section 14 of the Fisheries (Consolidation) Act 1959 from the Department of Communications, Climate Change, and the Environment. This method will mitigate against direct impacts on fish species within this area.
- If any dammed dry working area becomes inundated with flood waters due to dam breaches during flood conditions, then the method of fish removal through electrofishing will recommence before full dewatering take place.
- If crayfish are encountered within any dry working area, then they will be removed by a licensed ecologist outside of the working zone to prevent direct impacts on this species.
- All pumps will have a mesh cover over the intake to prevent fish from entering the pump during dewatering processes thus preventing direct impacts on fish species.
- Mitigation measures set out in Section 5.4.1.1 for protection of downstream water quality will be implemented for the protection of aquatic features and fisheries from water quality impacts.

5.5. Traffic Transportation

5.5.1. Construction Phase

5.5.1.1. Embedded mitigation measures

The following mitigation measures are embedded in the construction strategy, as detailed in Section 24.4.2 of Volume 4, Chapter 24: Traffic and Transportation (hereafter referred to as the 'Traffic and Transportation Chapter'):

The duration and sequencing of construction activities at the landfall and grid facility area.

The duration and sequencing of construction activities along the onshore cable route.

The identification of appropriate primary construction compound delivery routes.

Provision of adequate parking at all compounds to avoid queuing at the site entrances and prevent disruption to neighbouring businesses and residences.

The identification of local diversion routes where partial road closures will be operational.

The direction of traffic to strategic diversion routes where full road closures will be operational.

The identification of local diversion routes where full road closures will be operational.

The identification of bus diversion routes and bus stop relocations where full road closures will be operational.

Bus prioritisation in the case of partial road closures.

Local property access will be maintained for car, active travel, and service vehicles throughout construction.

The identification of delivery routes for abnormal loads.

Abnormal load deliveries restricted to outside peak traffic times where practicable.

Designated areas within the compounds for abnormal load unloading.

The use of the HDD technique for the Dublin-Belfast railway crossing, to avoid any disruption to railway infrastructure and the rail services between Dublin-Belfast and Dublin-Drogheda/Dundalk.

The use of the HDD technique for the M1 motorway crossing, to avoid any disruption to the national road network.

The primary construction compound delivery route to the landfall site and grid facility will be via Junction 7 on the M1 along the R132, as shown on Figure 24.2. Construction traffic related to the construction of the compounds at the landfall and grid facility area will be directed to avoid the alternative route (R122 and Harry Reynolds Road) through Balbriggan town centre.

The use of the HDD technique to route the onshore export cables under the Dublin to Belfast railway and under the M1 Motorway will avoid any disruption to railway infrastructure and the rail services between Dublin-Belfast and Dublin-Drogheda/Dundalk, and to users of the M1 Motorway.

Vehicles accessing the Blakes Cross cable contractor compound will be restricted to the primary construction compound delivery route. Vehicular access to the remaining site contractor compounds and working areas will be restricted to the construction traffic access routes along the onshore cable route.

The primary construction compound delivery routes and the construction traffic access routes along the onshore cable route are shown on Figure 24.2 of Volume 7A of the EIAR.

In order to limit the construction impact in Balbriggan, construction activities related to the onshore cable route itself will be restricted to the R122 and Harry Reynolds Road only.

The full road closures have been identified along narrower roads where the construction width is limited and where it would not be possible to lay the cable while safely maintaining partial traffic flows. In the case of full road closures local property access will still be maintained for car, active travel (pedestrians and cyclists) and service/emergency vehicles throughout, through the contractor's implementation of safe traffic management measures. Local diversion routes have been identified to maintain local community accessibility by car and active modes (See Appendix 24.1 in Volume 11 of the EIAR which provides details on full and partial road closure diversion routes). Strategic diversion routes have also been identified to mitigate the impact on local roads and will be recommended for general 'through' traffic where possible (See Appendix 24.1 in Volume 11). Bus diversion routes and bus stop relocations have been identified to ensure access to bus services is reasonably maintained where possible (See Appendix 24.1 in Volume 11). The strategic diversion routes will limit the volume of diverted general 'through' traffic along the bus diversion routes

There will also be rolling temporary partial (single lane) closures (each approximately 200 - 300m in length) throughout the remaining onshore cable route sections along the public road network. For temporary partial road closures, traffic flow will be maintained with the use of rolling temporary stop/go traffic signals along each section. Local diversion routes have been identified that will alleviate congestion along the corridor (See Appendix 24.1 in Volume 11). Local property access will be maintained for car, active travel and service/emergency vehicles throughout. Buses will be prioritised at stop/go locations where possible. Strategic diversion routes are not proposed for these partial closure locations.

Diversion routes will be managed according to the Contractor's Construction Traffic Management Plan (CTMP), refer to further details on the CTMP below.

As outlined above, those living along the road closure section will be able to access their properties throughout the road closure.

Abnormal load deliveries will be routed to the grid facility via the M1 junction 7 and along the R132 as shown on Figure 24.2. The cable drums will be delivered to the cable contractor compounds on specialist low loader vehicles. They will be routed to either the Bremore cable contractor compound via the M1 junction 7 and the R132, or to the Blakes Cross cable contractor compound via the M1 junction 4 and the R132. During the construction of the onshore cable route, cable drums of typical dimensions 3.7m wide, by 3.7m long and 4m high will then be transported along the onshore cable route on specialist low loader vehicles. The delivery routes are displayed on Figure 24.2 of Volume 7A of the EIAR.

The Contractor will confirm this prior to the first abnormal load deliveries and provide all details in the Contractor Construction Traffic Management Plan (CTMP). This version of the CTMP will update and further develop the CTMP which has been prepared and included in the Onshore Construction Environmental Management Plan (Onshore CEMP), refer to Volume 8, Appendix 9.1. Within the Contractor CTMP the contractor will also detail any traffic management associated with abnormal load deliveries and how they will adhere to all applicable permitting and approvals requirements with the Local Authority and An Garda Siochana prior to starting construction.

The transportation of abnormal loads will be restricted to outside peak traffic times where practicable.

All access roads to the proposed compounds will be designed to ensure abnormal loads can exit the public road during delivery with minimal disruption to the public road. A designated route and parking area for abnormal loads will be provided within the confines of the proposed compound for unloading, which will be detailed in the Contractors CTMP. Additionally, the Contractor CTMP will detail the temporary traffic management to be implemented during abnormal load deliveries, such as temporary stop/go lane or road closures, escort vehicles, banksman, etc., to be agreed by the contractor with the local authority and An Garda Siochana prior to starting construction.

5.5.1.2. Additional mitigation measures

Construction Traffic Management Plan (CTMP)

A Construction Traffic Management Plan (CTMP) has been prepared and is included in the Onshore CEMP (refer to Appendix 9.1 in Volume 8). Following consultation with An Garda Síochána, Fingal County Council and Dublin City Council, the CTMP will be further developed by the contractor, prior to the commencement of construction, to ensure that construction traffic will be managed and monitored safely and efficiently throughout the construction phase.

The following traffic management measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- Deliveries of materials will be planned and programmed to ensure that the materials are delivered to the extent possible, only as they are required at the compounds and along the onshore cable route and will avoid peak hours for set-up and removal of equipment where practicable.
- Works requiring multiple vehicle deliveries will be planned so as to ensure that queuing on the public roadways will be avoided wherever possible, around the compounds, at the compounds and along the onshore cable route section.
- For any works related to the compounds or onshore cable route that require lane closures, the length of lane closure and the required working area will be kept as small as possible.
- All trucks entering and exiting the compounds and along the onshore cable route which are carrying materials which could become windborne will be covered with tarpaulin.
- No parking or queuing of trucks will be allowed on public roads, either outside the compounds or any of the approach roads leading to the compounds or along the cable route, save during delivery/collection of materials (short term periods).
- All trucks entering the compounds will be restricted to suitable speed limits and will be directed to the relevant area by the site manager.
- All trucks will avoid school areas at drop off and collection times.
- Roads immediately adjacent to the compounds will be visually inspected on a daily basis and power swept and washed as and when required.
- 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.
- The contractor will be required to inspect the delivery routes to identify any issues and propose remedial measures as part of the permitting requirements for abnormal loads. This should include a detailed swept path analyses for the contractor's specific vehicle type and weight (dimensions to be confirmed) to ensure that the specific abnormal load can be transported safely.
- Temporary traffic arrangements will be in place to accommodate wide turning circles at compound access points, such as stop/go road closures or equivalent arrangements to maintain local access and safely accommodate through traffic.

- Road Safety Audits (stage 2/3) will be carried prior to construction and additional interim Road Safety Audits can be prepared ahead of and during construction as part of the Contractor's CTMP, and final RSA (stage 4) will be completed post-construction.
- The Contractor's CTMP will be agreed with the relevant local authorities and An Garda Siochana.
- The effectiveness of the CTMP 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.

Minimising durations of full road closures

Due to the potential negative, significant, temporary impact of the full road closures on local diversion route operations, strategic diversion route operations and bus services it is proposed to limit the duration of full road closures by assigning multiple construction crews to route sections along the length of the cable route, as an additional mitigation measure. The addition of multiple crews working simultaneously will add to the efficiency of the construction work. By incorporating this additional mitigation measure the duration of full road closures will be limited to between 1 and 4 weeks, depending on the route section.

Table 0.1: Approximate Road Closure Durations

| Route Section | Mitigation Measure | Road Impacted |
|---------------|--|----------------------------|
| 1 | 2 crews will reduce the duration of full road closures from 2-3 weeks to 1 to 2 weeks. | R132 (north of Balbriggan) |
| 10.1 | 2 crews will reduce the duration of full road closures from 5-6 weeks to 2-3 weeks. | Estuary Road |
| 10.2 | 3 crews will reduce the duration of full road closures from 11-12 weeks to 3-4 weeks. | Estuary Road |
| 12 | 2 crews will reduce the duration of full road closures from 6-7 weeks to 3-4 weeks. | R106 Swords Road |
| 13 | 3 crews will reduce the duration of full road closures from 10-11 weeks to 3-4 weeks. | R107 Malahide Road |
| 14 B.1 | 3 crews will reduce the duration of full road closures from 6-7 weeks to 2-3 weeks. | Chapel Road |
| 14 B.2 | 3 crews will reduce the duration of full road closures from 7-8 weeks to 2-3 weeks. | R124 Drumnigh Road |
| 14 B.3 | 3 crews will reduce the duration of full road closures from 1-2 weeks to less than 1 week. | Balgriffin Park |

Diverting Bus Services (currently operating along proposed partial road closures)

Bus services will be prioritised at stop/go lane closures along partial road closures, however, could potentially still incur significant delays along heavily trafficked routes. Due to the potential negative, significant, temporary impact of the partial road closures on bus services it is proposed to reduce the likelihood of bus services incurring delays by diverting bus services currently operating along proposed

partial road closures towards local diversion routes, as an additional mitigation measure. The appropriate bus route or local diversion route is to be determined the operator.

5.6. Onshore Archaeology, Architectural and Cultural Heritage

5.6.1. Construction Phase

5.6.1.1. Landfall Site

It is acknowledged that the preservation in-situ of archaeological remains is the preferred method in which to conserve the archaeological resource. To that end, every effort will be made during detailed design to avoid directly effecting the identified archaeological areas within the landfall site (AA5, 6, 7, 8, 9, 10, 11).

Following detailed design, a further programme of archaeological test trenching will be carried out within the refined development footprint with the aim of identifying any smaller archaeological remains that may survive within the onshore development area, which were not identified during geophysical survey or the first phase of archaeological testing.

If it is not possible to avoid direct impacts on the archaeological resource, the archaeological remains will be preserved by record prior to the commencement of construction. This will be carried out under licence, as issued by the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH). Full provision, within the programme of works, will be made for the resolution of any archaeological remains, both on site and during the post excavation process.

5.6.1.2. Grid Facility

It is acknowledged that the preservation in-situ of archaeological remains is the preferred method in which to conserve the archaeological resource. The location of the grid facility includes the identified archaeological areas AA1, 2, 3, 4 and CH01 but potential impacts on these sites could not be avoided by the footprint of the required infrastructure.

A further programme of archaeological test trenching will be carried out within the refined development footprint with the aim of identifying smaller archaeological remains that may survive within the development area, which were not identified during geophysical survey or the first phase of archaeological testing.

If it is not possible to avoid direct impacts on the archaeological resource, the archaeological remains will be preserved by record prior to the commencement of construction. This will be carried out under licence, as issued by the National Monuments Service of the DoHLGH. Full provision, within the programme of works, will be made for the resolution of any archaeological remains, both on site and during the post excavation process.

5.6.1.3. Onshore cable route

Table 0.2 details the mitigation measures that will be carried out prior to construction in order to reduce or remove potential impacts.

Table 0.2: Onshore Archaeology, Architectural and Cultural Heritage mitigation measures as part of the onshore cable route

| Ref.: | Description | Mitigation |
|-------|--|--|
| AAP04 | Watercourse and townland boundary. | Should the construction of the cable impact on the channel or banks of the watercourse (if offline open cut is required), an archaeological wade survey will be carried out in advance. This will be carried out under licence as issued by the DoHLGH. |
| CH04 | Site of structures associated with Ballough | Should the onshore cable route be laid through CH04, the excavation of the trench will be subject to archaeological monitoring, carried out by a suitably qualified archaeologist contracted by the developer, under licence, as issued by the DoHLGH. |
| BH06 | Milestone (not located during field inspection) | It is possible that this small item of roadside furniture has been removed. Further inspection, including the removal of vegetation, will be carried out. If the milestone is located, it will be hoarded off and protected during construction works in order to preserve the feature in-situ. |
| BH10 | Milestone | The milestone will be hoarded off and protected during construction works in order to preserve the feature in-situ. |
| CH23 | Site of post medieval structures | This is a greenfield area, which will be subject to a programme of geophysical survey and archaeological testing prior to the commencement of construction. This will be carried out under licence as issued by the DoHLGH. |
| AAP07 | Watercourse | Should the construction of the cable impact on the channel or banks of the watercourse (if offline open cut is required), an archaeological wade survey will be carried out in advance. This will be carried out under licence as issued by the DoHLGH. |
| BH12 | Daws Bridge | Should inline HDD be required to lay the cable beneath Daws Bridge, detailed design will be subject to assessment and supervision of a Grade 1 Conservation Architect. Archaeological monitoring may be also required for the works. Any archaeological works will be carried out under licence as issued by the DoHLGH. |
| CH37 | Three anomalies of archaeological potential (Google Earth) | This is a greenfield area, which will be subject to a programme of geophysical survey and archaeological testing prior to the commencement of construction. This will be carried out under licence as issued by the DoHLGH. |
| AH25 | Holy well (site of) | This monument appears to have been removed in the past due to the construction of the existing road network; however, all excavation works within proximity of the site will be subject to archaeological monitoring, under licence as issued by the DoHLGH. |
| AAP08 | Estuarine/coastal margin | The excavation of the trench through AAP08 will be subject to archaeological monitoring, under licence, as issued by the DoHLGH. |
| AAP09 | Watercourse | Should the construction of the cable impact on the channel or banks of the watercourse (if offline open cut is required), an archaeological wade survey will be carried out in advance. This will be carried out under licence as issued by the DoHLGH. |
| AAP10 | Watercourse | Should the construction of the cable impact on the channel or banks of the watercourse (if offline open cut is required), an archaeological wade survey will be carried out in advance. This will be carried out under licence as issued by the DoHLGH. |
| BH19 | Milestone | The milestone will be hoarded off and protected during construction works in order to preserve the feature in-situ. |

| Ref.: | Description | Mitigation |
|---------------------------------|---|---|
| DL14/ Abbey- ville ACA | Designed landscape associated with Abbeyville | This is a greenfield area, which will be subject to a programme of geophysical survey and archaeological testing prior to the commencement of construction. This will be carried out under licence as issued by the DoHLGH. |
| BH21 | Milestone | The milestone will be hoarded off and protected during construction works in order to preserve the feature in-situ. |
| BH22 | Bridge | Should the onshore cable route cross this bridge, detailed design will be subject to assessment and supervision of a Grade 1 Conservation Architect. Archaeological monitoring may be required for the works. Any archaeological works will be carried out under licence as issued by the DoHLGH. |
| AH30d | Ecclesiastical enclosure at Saint Doolaghs | The excavation of 130m of the cable trench through the road to the east of Saint Doolagh's ecclesiastical site will be subject to archaeological monitoring, under licence as issued by the DoHLGH. |
| AH30g | Cross at Saint Doolaghs | The cross will be hoarded off and protected during construction works in order to preserve the feature in-situ. |
| CH10 | Bridge | All excavation works across the bridge will be subject to archaeological monitoring under licence, as issued by the DoHLGH. |
| AAP11 | River Mayne | Should the construction of the cable impact on the channel or banks of the watercourse (if offline open cut is required), an archaeological wade survey will be carried out in advance. This will be carried out under licence as issued by the DoHLGH. |
| BH33 | Belcamp House (surviving walled garden) | All excavation works adjacent to the wall will be subject to archaeological monitoring under licence, as issued by the DoHLGH. |

All greenfield areas that are required for the construction of the onshore cable route, will be subject to a programme of geophysical survey, followed by a programme of archaeological testing, prior to the commencement of construction in any one area. These programmes of investigation will be carried out under licence from the DoHLGH. Dependant on the results of the assessments in these areas, further mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require the agreement of the National Monuments Service of the DoHLGH.

All excavation works within the zones of notification for AH28 and AH32 will be subject to archaeological monitoring under licence, as issued by the DoHLGH.

A draft Cultural Heritage Mitigation Strategy detailing the required mitigation measures (including definitions of same) has been appended to this EIAR (Appendix 25.4 of Volume 10 of the EIAR). This document will remain a live document and will require updating by the relevant heritage contractors during the course of the project at pre-construction and construction stages.

5.7. Material Assets

5.7.1. Construction Phase

Effects during the construction phase will be short-term to temporary in nature and will last only for the duration of the localised construction works. As a result of the assessment undertaken in Section 26.5 of Volume 4, Chapter 26: Material Assets, no likely significant effects are anticipated during construction, operation or decommissioning of the proposed development. Therefore, the mitigation measures presented in this section are included as best practice measures.

Where works are required alongside or to cross known utility infrastructure, precautions will be implemented by the appointed contractor to protect the infrastructure from damage, in accordance with best practice methodologies and the requirements of the utility companies, where practicable. Protection measures during construction will include warning signs and markings indicating the location of utility infrastructure, safe digging techniques in the vicinity of known utilities, and in certain circumstances where possible, isolation of the section of infrastructure during works in the immediate vicinity. 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;

- Where the onshore cable route passes beneath existing overhead services, suitable fencing, goal posts, and guarding will be installed during construction in accordance with best practice;
- The use of Ground Penetration Radar (GPR), to provide greater confirmation of the locations of existing assets;
- All excavation works to be completed in accordance with Guidelines for Managing Openings in Public Roads;
- The use of trial holes/slit trenches 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, final details.

Interruptions to existing utilities will be kept to a minimum and these will only occur where interruptions are unavoidable. In these instances, any interruption will be planned in advance by the appointed contractor and prior notice will be given to all impacted residents or businesses. This notification shall include all information on when the works will take place and the expected duration of such interruptions. All works will be carefully planned by the contractor to minimise any disturbances as far as practicable.

For all crossings taking place within the bridges listed in Section 26.5.2.2 of Volume 4, Chapter 26: Material Assets, in addition to the embedded mitigation inherent in the design of the bridge crossings, all details of the bridge crossings, including any pre-construction surveys will be agreed with local authorities prior to construction. Further mitigation measures relating to the protection of structures listed under the Record of Protected Structures (RPS) are provided in Volume 4, Chapter 25: Onshore Archaeology, Architecture and Cultural Heritage.

Pre-construction surveys to determine the structural capacity of the existing bridge at the landfall site (OBB62) will be undertaken and assessed against the anticipated construction traffic. This will inform what interventions (if any) in terms of strengthening or temporary works may be required. Further information is provided in Section 9.5 of the Volume 2, Chapter 9: Construction Strategy – Onshore (See also Section 36.17 above).

All works near existing services and utilities will be carried out in consultation with the relevant Utility Provider and Local Authority and will follow any requirements or guidelines they may have.

5.8. Air

5.8.1. Construction Phase

The following mitigation measures will be implemented for the construction phase of the proposed development, in order to reduce the dust risk and impacts associated with the construction, earthworks and track-out as per IAQM guidance.

5.8.1.1. Mitigation for all working areas

A Community Liaison Plan that includes community engagement before work commences on site will be developed. The proposed procedures for community liaison and engagement relating to Air Quality are set out in Volume 8, Appendix 9.1: Onshore Construction Environmental Management Plan.

The Contractor will hold regular liaison meetings with other construction sites within 500m of the proposed development boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised when works are occurring concurrently.

Site Management

- 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.

Preparing and maintaining the site

- Plan construction compound 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 all construction/ contractor compounds.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Cover, seed or fence stockpiles to prevent wind whipping.

Construction Plant Operations

- Ensure an adequate water supply on the working areas for effective dust/particulate matter suppression/mitigation.

- Use enclosed chutes where possible 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.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

5.8.1.2. Measures specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

5.8.1.3. Measures specific to Track-out

- Ensure no mud or debris accumulates on the public road and public roads are clean of any mud, dust or debris by suitable means. 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 when transporting materials that are likely to generate dust to prevent escape during transport.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

5.8.1.4. Measures specific to the grid facility construction activities

- 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 grid facility 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.

5.8.1.5. Measures to be applied at the Malahide Estuary

- Erect a 2m minimum site hoarding around the working areas adjacent to the Malahide Estuary (Estuary Road) and where works are in proximity to the North West Irish Sea cSPA.

5.8.1.6. Construction Phase Monitoring Measures

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 are nearby, to monitor dust, record inspection results, and make the log available to Dublin City Council and Fingal 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, such as during excavation activities during dry periods.
- Dust monitoring will be undertaken at the three nearest sensitive receptors (with agreement from the landowner) to major works during works likely to generate dust (refer to Section 27.4 of Air Quality chapter).
- The TA Luft dust deposition limit values of 350 mg/m²/day applied as a 30-day average.

5.9. Climate

5.9.1. Construction Phase

A series of mitigation measures have been incorporated into the construction design with the goal of reducing the embodied carbon associated with the construction phase of the proposed development. These mitigation measures include:

- The substitution, where feasible, of concrete containing Portland cement with concrete containing ground granulated blast furnace slag (GGBS). This measure has led to an estimated saving of c.2,800 tonnes of CO₂eq in the current design of the proposed development;
- The proposed development will minimise wastage of materials due to poor timing or over ordering on site thus helping to minimise the embodied carbon footprint of the proposed development;
- Where practicable, opportunities for materials reuse will be incorporated within the extent of the proposed development including the use of reclaimed asphalt and recycled aggregate. This measure has led to an estimated saving of 2,545 tonnes of CO₂eq; and
- Where practicable, materials will be sourced locally to reduce the embodied emissions associated with transport.

The combined measures, including the incorporation of GGBS, recycled and reused material where practicable has led to an estimated saving of 5,340 tonnes of CO₂eq.

The construction traffic GHG emissions associated with the construction phase of the proposed development will be short-term and temporary in nature. A Construction Traffic Management Plan for the proposed development is included as part of Volume 8, Appendix 9.1: Onshore Construction Environmental Management Plan.

5.10. Seascape, Landscape and Visual

5.10.1. Construction Phase

There are no specific LVIA mitigation measures proposed during the construction phase for the onshore infrastructure aspects of the proposed development. However, site hoarding around the Grid Facility, which has a number of functions including safety and security, will also serve as a visual screen. It will at least partially screen the movement and clutter associated with the building site including movement of people and vehicles / small machinery as well as stockpiles of excavated material, building material and bare ground. There will also be hoarding placed around other construction compounds throughout the landfall site and onshore cable route. These will have a similar benefit of reducing visibility of ground based activity and materials.

5.11. Noise

5.11.1. Construction Phase

5.11.1.1. Temporary noise barriers

It has been assumed that along with the good industry practice measures set out in Section 36.22.2 below, temporary noise barriers/site hoarding will be erected around the works at the main compounds and static construction worksites to reduce noise to nearby residences and/or key ecological receptors. Barriers will be erected around the following sites as follows:

- Grid facility, barriers to be provided (bar at access gates and adjacent to the R132) along the site perimeter where residential dwellings lie within 200m of the onshore development area
- Grid facility contractor compound (whole perimeter bar at access gates)
- Bremore cable contractor compound: barriers to be provided along the parts of the compound perimeter (bar at access gates) where residential dwellings lie within 200m of the compound
- Along the eastern edge (bar at access gates) of the Blakes Cross cable contractor compound
- Railway HDD entry site contractor compound at the landfall site (whole perimeter bar at access gates)
- Landfall HDD contractor compound at the landfall site (whole perimeter bar at access gates)
- M1 HDD entry site contractor compound (northern, eastern and southern edges of the compound perimeter, bar at access gates)
- If night-time HDD works are to be carried out at the following sites, barriers will be erected at the HDD entry contractor compounds (whole perimeter bar access gates) at water crossings WX9, WX10, WX16, WX17 and WX18.
- Noise barriers have been assumed to provide 10dB(A) of noise mitigation for the above works.

The onshore cable route works will progress relatively quickly and will be primarily carried out on roads where the works need to be kept to a minimum of working width to minimise the need for road closures. Therefore, no noise barriers have been assumed for the onshore cable route works other than at the following specific locations:

- Temporary noise barriers will be provided between the onshore cable route construction working area and the following four schools:
- Corduff National School: a primary school on the R132 in Corduff,
- St Nicholas of Myra National School, Kinsealy on the R107 Malahide Road,
- St Molagas National School on the R132 Dublin Road, Balbriggan, and
- Malahide/Portmarnock Educate Together National School on the R107.

At the Malahide Estuary, which is separated from the works area by, in most parts, 20-50m, the first measure of avoidance will be to avoid works along the Estuary Road during the period September to March when wintering birds are present. Where this is not practicable, for works at Malahide Estuary during the period of September to March, noise barriers will line the works area within Estuary Road on the estuary side to protect wintering birds utilising the nearest estuarine habitats.

5.11.1.2. Good Industry Practice

Good industry standards, guidance and practice procedures will be followed in order to minimise noise and vibration effects during construction, and these are documented within the Construction Environmental Management Plan (CEMP) Volume 11, Appendix 9.1. 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.
- 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.

5.11.1.3. Communications

Community Liaison will be led by the Developer, however, the Contractor will also take all reasonable steps to engage with stakeholders in the local community, focusing on those who may be affected by the construction works including residents, businesses, community resources and specific vulnerable groups.

Communication with the local community and other relevant stakeholders will be undertaken at an appropriate level and frequency throughout construction.

The Contractor will follow the Community Liaison Plan as provided by the Developer, which will include 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. A dedicated website will be established for the proposed scheme, which will describe the progress and will be kept up to date by the Developer.

Further detail of the community liaison and environmental management measures to be applied during the construction period can be found in Volume 8, Appendix 9.1: Onshore CEMP

5.11.1.4. Noise and Vibration Monitoring

Monitoring of noise and vibration levels at the construction site boundary will be undertaken at noise-sensitive receptors near the working areas to identify where work procedures need to be modified. In the event of a valid complaint a noise monitoring protocol will be submitted to the relevant local authority 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. Resource and Waste Management

No significant negative effects are anticipated during either the construction phase, the operational phase or the decommissioning phase of the proposed development. Nonetheless, a suite of mitigation and monitoring measures is outlined below. These measures will ensure that the sustainable resource and

waste management principles outlined in Section 31.2.1 of Volume 5, Chapter 31: Resource and Waste Management (hereafter referred to as the 'Resource and Waste Chapter'), including circular economy principles related to the use of resources and adherence to the waste hierarchy, are implemented.

5.12.1. Construction Phase

Every reasonable effort will be made to ensure that significant environmental effects will be prevented or reduced during the construction phase of the proposed development.

An offshore waste management procedure is included in the Offshore EMP (Volume 8, Appendix 6.1) and a Construction Resource Waste Management Plan (CRWMP) is included in the Onshore CEMP (Volume 8, Appendix 9.1). These plans meet the requirements outlined in the Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (EPA, 2021) as well as the requirements outlined in Annexes IV and V of the MARPOL Convention. The appointed contractor will be obliged to further develop, implement and maintain the waste management plan and CRWMP during the construction phase.

5.12.1.1. General Mitigation Measures

The key principles underlying the waste management plan and the CRWMP will be to minimise waste generation and to segregate waste at source. The measures to achieve these which are relevant to both the offshore and onshore aspects of the proposed development include:

- Where waste generation cannot be avoided, waste disposal will be minimised;
- 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 by clearly labelling waste types;
- All staff on-site will be trained on how to minimise waste (i.e., training, induction, inspections and meetings);
- Materials on-site will be correctly and securely stored;
- Waste generated on-site will be removed as soon as practicable following generation for delivery to an authorised waste facility;
- The appointed contractor will record the quantity in tonnes and types of waste and materials leaving the site during the construction phase. 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, which is recycled and which is disposed of;
- Any hazardous waste arising will be managed by the appointed contractor in accordance with the applicable legislation;
- Waste generated from on-site offices will be source separated at least into residual waste, dry mixed recyclables and organic waste; and

- The relevant appropriate waste authorisation will be in place for all facilities that wastes are delivered to (i.e., certificate of registration, waste facility permit and / or EPA waste licence).

5.12.1.2. Onshore Mitigation

For the management of resources and waste generated from the onshore construction works, specific measures have been adopted and included within the CRWMP. These include:

Paints, sealants and hazardous chemicals will be stored in secure, bunded locations;

- Opportunities for the reuse of materials, by-products and wastes will be sought throughout the construction phase;
- Possibilities for reuse of clean non-hazardous excavation material as fill on the site will be considered following appropriate testing to ensure material is suitable for its proposed end use;
- Where non-hazardous excavation material cannot be reused within the proposed development works, material will be sent for recycling or recovery;
- Any identified contaminated material 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;
- If encountered, any potential asbestos during the construction phase will be managed using standard health and safety measures as outlined in 'Asbestos-containing Materials (ACMs) in Workplaces: Practical Guidelines on ACM Management and Abatement' (HSA, 2013). This document states that "removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed" and "a risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies" (HSA, 2013);
- Paints, sealants and hazardous chemicals will be stored in secure, bunded locations;
- Where excavation material cannot be reused within the proposed development, the appointed contractor will endeavour to send material offsite for reuse as a by-product, recovery or recycling, in so far as is reasonably practicable;
- The appointed contractor will ensure that any off-site interim storage facilities for excavation material have the appropriate certificate of registration, waste facility permit and / or EPA waste licence in place;
- Where Regulation 27 notifications are required in relation to the proposed development, the appointed contractor will complete and submit these Regulation 27 notifications to the EPA for by-product reuse; and
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site.

5.13. Population and Human Health

5.13.1. Construction Phase

Mitigation measures proposed in the Air Quality, Noise and Vibration, Traffic and Transportation and the Seascape, Landscape and Visual Chapters will help to avoid or minimise adverse population and human health effects during the construction phase of the proposed development. This mitigation is embedded within the residual assessments on which the population and human health assessment is based, and includes:

- The implementation of an Onshore Construction Environmental Management Plan (CEMP) (see Appendix 9.1 in Volume 8)
- The erection of directional and information signage where paths are temporarily closed
- The provision of information to local householders and the wider community in a phased approach before construction begins and iteratively as the construction progresses via direct mail campaigns, social media alerts and frequent updates via a dedicated news section on the proposed development website (www.northirishsearray.ie)
- The on-going provision of a dedicated community liaison officer to manage community relations, be available via mobile phone and email to provide a link between the community and the developer throughout the construction phase; and
- The preparation of an emergency response plan to cover foreseeable risks.

Industry-standard traffic management measures will be put in place to alleviate construction-related traffic disruption. Further details are provided in the Construction Traffic Management Plan (CTMP) which is contained within Appendix 9.1.

The construction strategy requires all contractors to comply with legislation and good industry practice with regard to the health and safety of both workers and the public. As required by regulation and legislation, a Health and Safety Plan will be prepared to address health and safety issues from the design stages through to completion of the construction and maintenance phases. This plan will be reviewed and updated as required, as the development progresses. The Project Supervisor Construction Stage will assemble the Safety File as the project progresses on site. Prior to commencement of site work, the appointed Contractor(s) will produce detailed construction method statements, work programmes and risk assessments.

No further mitigation measures are proposed in relation to population and human health in addition to the embedded mitigation measures described above.

5.14. Socio-Economic, Tourism and Recreation

5.14.1. Construction Phase

Mitigation measures are proposed to reduce any potential impacts relating to access of tourism or recreational receptors during the construction phase. Pedestrian access to Bremore Beach will be maintained to the south of the proposed development boundary at the landfall site to allow for public enjoyment of the remainder of the southern section of Bremore Beach.

Road closures will be localised and are detailed fully in the Traffic and Transportation Chapter. Access to recreational facilities impacted by road closures will be maintained as far as practicable.

5.15. Major Accidents and Disasters

Embedded mitigation measures were considered in order to reduce the likelihood rating of identified potential risk events occurring. These embedded mitigation measures for the construction, operation and decommissioning phases are documented in Table 34.8 of Volume 5, Chapter 34: Major Accidents and Disasters.

Additional mitigation measures during construction are proposed for two risk events which are identified as falling in the amber zone i.e. medium risk (which are deemed to present a risk of significant effects as described in Section 34.2.6.5 of Volume 5, Chapter 34: Major Accidents and Disasters), based on the absence of control measures to limit the consequence.

Risk event C13 is a cliff collapse at landfall during HDD activities. This would have the consequence of the loss of an Annex 1 habitat. With adequate control measures including workforce training and adherence to good industry practice, the consequence should be minimised. No additional mitigation measures are proposed.

Risk event C23 is damage to Interconnector 1 or 2 during the construction of the onshore cable crossing. This event could result in significant loss of life or serious injury, and serious economic and societal consequences. With adequate control measures including workforce training, adherence to good industry practice and compliance with the GNI guidance, the consequence should be minimised. No additional mitigation measures are proposed.

6. Emergency Response Plan

6.1. Introduction

Emergencies are those occurrences that give rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system;

- Any emission that does not comply with the requirements of the contract and relevant licences;
- Any circumstance with the potential for environmental pollution; or
- Any emergency that may give rise to environmental effects (e.g. significant spillages or fire outbreak).

The focus of including all of the stringent measures in this Onshore CEMP is on prevention of an incident arising in the first place. However, an Emergency Response Plan will be prepared to ensure that in the unlikely event of an emergency, response efforts are prompt, efficient, and suitable for particular circumstances. This Plan will be a live document and will be updated by the contractor(s) following appointment and prior to commencing works on site.

6.2. Plan Objectives

The objectives of the Emergency Response Plan are:

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

6.3. Implementation of the Plan

The likelihood of an incident or emergency can be minimised by effective planning through the development of an Emergency Response Plan (ERP). The Plan will be reviewed and updated regularly so that it continues to apply to construction activities. The Plan will identify the on-site risks and appropriate responses.

It will be the responsibility of the contractor(s) to maintain and change the ERP as required. The ERP will be reviewed on an on-going basis and immediately amended, as necessary, when applicable regulations are revised or when amendments are required by a regulatory authority. Any incidents will be immediately reported to the Developer and any regulatory authority as required.

6.4. Environmental Emergency Response Procedures

The best way to manage pollution incidents is to prevent them. Emergency procedures will be developed – either project specific, site specific or activity specific and all personnel on site will be required to know these procedures.

The Emergency Response Plan will be based on the following elements:

- Identification of all possible emergency scenarios;

- Effective planning, e.g. availability of booms, spills kits at appropriate locations;
- Identification of receptors/pathways (e.g. surface water drains/river);
- Identification and dissemination of contact numbers;
- Definition of site-based staff responsibilities;
- Appropriate site-based staff training;
- Exercise of incident scenarios – spill drills;
- Availability of suitable spill kits at appropriate locations on the site;
- Implement lessons learnt from previous incidents; and
- Ensure that all appropriate site staff are aware of the site emergency procedure(s) (e.g. spillage, leakage, fire, explosion and flooding), that drain covers and spill kits are available, and they know how to use them.

Emergency access routes will be maintained throughout construction and identified in partnership with the emergency services. Any incidents will be immediately reported to the Developer and any regulatory authority as required.

6.4.1. Spill Response

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed scheme. The risk of oil/fuel spillages will exist on the site and any such incidents will require an emergency response procedure, such as a pollution spill response procedure. Given the scale and extent of the proposed development, the contractor(s) will have spill kit materials in the cabins and mobile plant and machinery will be accompanied by a spill kit.

In terms of pollution spill response procedures, these will vary depending on the sensitive receptor and nature of construction activities. However, the following information will be included as a minimum and displayed at appropriate locations:

- Instruction to stop work and to switch off sources of ignition;
- Contain the spill; location of spill clean-up material;
- Name and contact details of responsible staff (these staff will assess the scale of the incident to determine whether the environmental regulator needs to be called); and
- Measures particular to that location or activity (for example, close pond outlet valve).

Emergency equipment will be obtained from a reputable supplier and site staff will be trained in its correct use. Material Safety Data Sheets and best practice assessments will be used for advice on appropriate spill measures. The type of equipment required will depend on the activity taking place.

In the event of an oil/fuel spill occurring on site the following steps are to be adhered to:

- Identify and stop the source of the spill and alert people working in the vicinity;

- Notify the Environmental Clerk of Works (EnCoW), immediately giving information on the location, type and extent of the spill so that they can take appropriate action;
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident;
- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill;
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/or sensitive habitats;
- If possible, clean up as much as possible using the spill control materials;
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor(s) with the appropriate permits so that further contamination is limited;
- The EnCoW will inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and
- The EnCoW will notify the Employer's Representative who will notify the Employer and appropriate stakeholders such as National Parks and Wildlife Service, Inland Fisheries Ireland, Environmental Protection Agency (EPA).

Further details on mitigation measures are provided in Section 5 of this document.

6.4.2. Reporting and Recording

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident will be reported, recorded and investigated in accordance with the following steps.

- The Environmental Clerk of Works (EnCoW) will be immediately notified.
- The EnCoW will inform the Employer's Representative who will notify appropriate regulatory authority, if necessary.
- The details of the incident will be recorded on an Environmental Incident Form will include the following, as a minimum:
 - A description of the incident, including location, the type and quantity of contaminant and the likely receptor(s);
 - Contributory causes;
 - Negative effects;
 - Measures implemented to mitigate adverse effects; and
 - Any recommendations to reduce the risk of similar incidents occurring.

- In the very unlikely event of an incident occurring which may impact on a sensitive receptor, the relevant persons/authorities will immediately be informed (such as the Contractor's Archaeologist, Contractor's Ecologist, NPWS, IFI and EPA);
- A record of all environmental incidents will be kept on file by the contractor(s) and will be made available for inspection to the Employer's Representative and the relevant authorities, if required;
- The Environmental Manager, in consultation with the EnCoW will be responsible for any corrective actions required as a result of the incident e.g. an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the contractor(s) as appropriate;
- By carrying out the above steps, a proper system will be in place to investigate, record and report any potential accidents or incidents; and
- Emergency access routes will be maintained throughout construction and identified in partnership with the emergency services.

6.4.3. Fire Control Measures

Every effort will be made to prevent the outbreak of a fire during the construction phase of the proposed scheme. Fire extinguishers and first aid supplies will be available in the works areas. In the event of such an incident, the health and safety of all personnel will be a priority. All relevant legislation and guidance on health and safety of people and in particular fire safety will be complied with.

6.4.4. Extreme Weather Events

The effects of extreme weather events and related conditions during construction will be considered. Short to medium range weather forecasting service from Met Eireann or other approved meteorological data and weather forecast provider will be used to inform short to medium term programme management, environmental control and mitigation measures.

All measures deemed necessary and appropriate to manage extreme weather events will be taken, including training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements will also consider extreme weather events where risks have been identified, e.g. construction works near the shore.

6.4.5. Unexpected Discoveries

Appropriate procedures will be put in place, to be employed in the event of encountering unexpected archaeological or cultural heritage assets or subsurface contamination during intrusive ground works. Further details on how to address unexpected archaeological or cultural heritage assets and subsurface contamination are provided in Section 5 above.

Appropriate procedures will be developed, and the Environmental Manager will ensure that specialists (e.g. archaeologist) are facilitated to ensure management in accordance with industry best practice and effective

compliance with the relevant legislation. All unexpected discoveries will be documented in an appropriate manner and reported to the Employer's Representative who will inform the appropriate authorities.

6.4.6. Corrective Actions and Reporting

Corrective actions are measures to be implemented to rectify any non-conformances (i.e. exceedance of criteria or targets) identified during monitoring, inspections and/or audits.

In the first instance, an investigation shall be undertaken by the Environmental Manager, accompanied by the EnCoW to identify the cause of any non-conformances. Appropriate remedial measures will be identified and implemented as soon as practicable to prevent further exceedances. If necessary, the appropriate statutory authority and stakeholders will be notified.

Where new or amended measures are proposed, the Onshore CEMP will be updated accordingly by the Environmental Manager in consultation with the EnCoW and the Employer's Representative shall be informed at the earliest opportunity.

A Corrective Action Report is prepared on foot of any non-conformances identified during environmental monitoring, inspections and/or audits on site. The Corrective Action Report will describe in detail the cause and effect of a nonconformance on site and describe the recommended corrective action that is required to remedy it.

An appropriate timeline for closing out the corrective actions will be identified by the Environmental Manager as well as arrangements for the EnCoW verifying the Corrective Actions Report and informing appropriate authorities and stakeholders in a timely manner.

6.5. Emergency Contact List

The Emergency Response Plan will contain emergency phone numbers and the method of notifying local authorities, statutory authorities and stakeholders. Contact numbers for key personnel will also be included therein. The contractor(s) will be required to adhere to and implement these procedures and ensure that all staff and personnel on site are familiar with the emergency arrangements.

Contact details will be obtained for the following:

- Radio/mobile contacts for site management and trained staff,
- Out-of-hours contacts,
- Environmental regulators (hotline or local contact),
- Irish Water (for spills to foul sewer),
- Dublin City Council
- Fingal County Council,
- Inland Fisheries Ireland,

- National Parks and Wildlife Service,
- Environmental Protection Agency and
- Spill response and clean-up Contractors.

7. Training and Auditing

7.1. Environmental Induction and Awareness Training

The contractors and sub-contractors will be selected with due consideration of relevant qualifications and experience. The Contractors will be required to employ construction staff with appropriate skills, qualifications and experience appropriate to the needs of the works to be carried out during construction.

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the contractors will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled.

The contractors will establish an Environmental Training and Awareness Programme and ensure that all personnel receive adequate training prior to the commencement of construction activities. A baseline level of environmental awareness will be established through the site induction programme. Key environmental considerations and objectives will be incorporated into this induction. Specifically, site inductions will cover the following as a minimum:

- Introduction to the Environmental Clerk of Works (EnCoW).
- Description of the Onshore CEMP and consequences of non-compliance.
- The requirements of due diligence and duty of care.
- Overview of conditions of consents, permits and licences.
- Requirements associated with community engagement and stakeholder consultation.
- Identification of environmental constraints and notable features within the site.
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment.
- Nobody will work on site without first receiving environmental induction. Site personnel will be made aware of their responsibilities and liabilities with reference to protection of water quality, ecology and site-specific environmental protection during daily pre task talks. All relevant employees will be trained on the use of spill kits materials, silt fencing installation and maintenance, and the relevant response procedures. Signed records of environmental training will be established, maintained and made available to the Employer's Representative. Where a site-specific method statement/plan has been devised for a works activity (e.g. working in an area where non-native invasive species are present or carrying out instream works), all site personnel involved in that activity will be given an in-depth toolbox

talk outlining the particular environmental commitments and control measures which are appropriate to the works being carried out.

- Site briefings and toolbox talks will be carried out on a regular basis to ensure that construction staff have an adequate level of knowledge on environmental topics and community relations and can effectively follow environmental control procedures throughout construction.

7.2. Toolbox Talks

During construction, in order to provide on-going reinforcement and awareness training, environmental risks of the site, environmental incidents and emergency response plan, along with any other environmental issues which arise onsite, will be discussed at regular toolbox talks. Toolbox talks and training will be delivered by specialist personnel onsite (e.g. ECoW) as required.

The contractors will submit 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.

Specifically, the contractors provide, 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.

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.

7.3. Compliance, Reviews and Auditing

7.3.1. Environmental Compliance Report

The contractor(s) will be required to submit a monthly report to the Employer's Representative for review and approval. The report will address the following as a minimum:

- Summary of compliance with the Onshore CEMP including identification of any non-conformances;
- Interpretation of the results of ongoing monitoring;
- Detailed description of any issues and/or non-conformances identified during inspections and/or audits;
- Record of incidents and corrective actions (including Corrective Actions Reports as appropriate);
- Synopsis of environmental complaints received / queries raised by stakeholders; and
- Records of environmental training undertaken (as appropriate).

7.3.2. Incident Investigation Reports

The contractor(s) will inform the Employer's Representative of all emergency incidents immediately and prepare an initial report within 24 hours setting out the details of the incident and cause(s) if known. The contractor(s) will be required to complete the Environmental Incident Report and any further documentation requested by the Employer's Representative in relation to the incident within 7 days of the incident occurring. The contractor(s) will respond to all comments made by the Employer's Representative on any incident.

The Environmental Incident Report will contain details of the incident including the location, known and suspected causes and weather conditions. It will define the scale and effects (short, medium, long term, temporary/permanent) as well as required corrective actions and mitigation/ remediation/compensation measures (as appropriate).

7.3.3. Environmental Records

Records of all environmental documentation will be maintained including monitoring, test results, method statements and plans. All records will be kept up to date and be made available for audits, inspections and periodical reporting. The contractor(s) will maintain the following environmental records (as a minimum) that will be made available for inspection to the Employer's Representative and the relevant authorities, if required:

- Onshore CEMP;
- Records of environmental incident forms;

- Monthly environmental reports;
- Records of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspection and audit reports;
- All monitoring data;
- Waste and chemical inventories; and
- Health and Safety records.

7.3.4. Reviews

For the duration of the contract the environmental performance of the contractor(s) will be monitored through site inspections and audits. The programme for monitoring, inspections and audits will be specified in the contract and it is likely to be a combination of internal inspections by the contractor's own team and audits by the EnCoW/ECoW that may be either random or routine.

Records of all inspections carried out will be recorded on standard forms and all actions to be closed out in a reasonable time.

7.3.5. Auditing

The EnCoW/ECoW will carry out audits during the onshore construction phase and will advise on compliance with applicable environmental regulatory requirements, the effectiveness of the environmental commitments used, and recommendations for reducing identified environmental risks (if considered appropriate).

Further, regulatory and statutory bodies may undertake site visits to monitor compliance with legislative and regulatory requirements. These site visits may occur randomly throughout the construction period. The contractor(s) will facilitate these visits and the Environmental Manager will be available, along with the EnCoW to provide information as required and deal with any issues that may arise during, or as a result of, these visits.

Planned and documented audits aimed at evaluating the conformance of the Onshore CEMP will also be carried out by the EnCoW. The schedule and frequency for internal audits will be prepared by the EnCoW and subsequently made available to the Employer's Representative. These environmental audits will be scheduled at least once every three months.

The contractor(s) will be required to prepare standard forms for reporting and auditing. Items will include but not be limited to the following activities:

- Review of environmental documentation to establish if relevant requirements are being achieved and if continual improvement is occurring;

- Site inspection and interviews with onsite personnel; and
- Reporting with recommendations.

For any environmental nonconformities found, a Corrective Actions Report (refer to Section 6.4) will be prepared and will describe and record the findings of the non-conformance. The verification of previous Corrective Action Reports will be also recorded.

Upon completion of an audit, the Employer's Representative will review all Corrective Action Reports and prepare an Audit Report to summarise:

- Corrective action requests raised;
- Previous corrective action requests closed; and
- Observations made during the audit.

The Environmental Manager will be entitled to participate in all audits. Notwithstanding this, the Employer's Representative will produce and provide the contractor(s) with a copy of each audit report within five working days of the audit. Each audit report will detail the findings from the auditor, specify non-conformances identified and outline the proposed corrective actions.

7.3.6. Inspections

Routine inspections of construction activities will be carried out by the Environmental Manager daily to ensure all necessary environmental measures relevant to the construction activities are being effectively implemented by construction staff, ensuring legal and contractual conformity.

More detailed inspections will be undertaken by the Environmental Manager on a weekly basis.

The weekly inspections will be appropriately documented by the Environmental Manager and copies of these records, and any action required to be undertaken will be made available to the Employer's Representatives EnCoW.

Each month one of the weekly inspections will include a review of environmental documentation and records. The monthly inspection will be recorded on a standard form and reported to the Employer's Representative EnCoW within five days of the inspection taking place. This standard form will address the following as a minimum:

- Summary of compliance/non-compliance with the Onshore CEMP;
- Results and interpretation of the monitoring programme;
- Key issues noted in inspections and/or audits;
- Summary record of non-conformities, incidents and corrective actions, in accordance with Section 6;
- Summary of environmental complaints and queries received in relation to environmental matters; and

- Summary record of environmental training undertaken by staff.

8. Communications and Complaints

8.1. Communication and Engagement

8.1.1. Internal Communication

The Contractors will put in place an Internal Communication Strategy which will include procedures for effective internal communications. The strategy, which will be finalised by the contractor(s) will include measures such as the following:

- The site management meeting will include environmental issues on the agenda;
- Weekly site safety meetings will include environmental issues on the agenda;
- The Environmental Manager will report on environmental issues to the site management meetings; and
- The Environmental Manager will attend the weekly meetings.

8.1.2. Community Liaison and Stakeholder Liaison

The Developer 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 residents, businesses, community resources and specific vulnerable groups.

This function will be led by a dedicated Community Liaison Officer (CLO), appointed by The Developer in advance of construction.

The Developer will establish a Communications Management Plan, which will specify the approach and protocol in relation to community and stakeholder engagement which the contractor(s) must support and adhere to. An Outline Communications Management Plan is included in Appendix C of this Onshore CEMP.

Communication with the local community and other relevant stakeholders will be undertaken at an appropriate level and frequency throughout construction.

The Developer recognises the importance of effective community liaison in order to reduce nuisance to residents, to ensure public safety and welfare and to help ensure the smooth running of construction activities. Important actions in ensuring good relations are:

- Early engagement with communities to build awareness of construction elements to include:
 - Sharing detail of onshore infrastructure along with precise locations
- Providing images, maps and photomontages of critical pieces of onshore infrastructure Gathering feedback on proposed approaches which could help mitigate disturbances e.g. scheduling and sequencing of construction works

- Providing frequent and detailed information for the public both in advance and during construction , (particularly nearby sensitive receptors);
- Providing the correct points of contact and being responsive;
- Ensuring good housekeeping in all aspects of the operations; and
- A 'good neighbour' policy will be implemented, as far as possible. 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.

The Developer, with the support of the contractor(s) will be required to prepare a Community Liaison Plan, which will include 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. A dedicated website will be established for the proposed scheme, which will describe the progress and will be kept up to date with bulletins from the contractor(s).

This Plan will typically include details of the following:

- The Developer's community relations policy;
- Personnel nominated to manage public relations;
- A methodology for recording and addressing 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.

8.1.3. Regular Consultation and Public Communications

The Developer's Communications Management Plan will also specify obligations in relation to regular proactive consultation and public communications activities required during the construction of the proposed scheme. The Developer, supported by the contractor(s), will facilitate regular consultation in accordance with the specifications and cooperate with this Plan. Where communications are related to environmental issues the Environmental Manager and the Contractor's Ecologist will be informed and engaged with, as appropriate.

Details of the available communication channels/points of contact for members of the public to contact the CLO, the EnCoW and the contractor(s) during construction will be established in advance of the commencement of construction and displayed around working areas.

8.1.4. Advance Notice of Works

The Developer, with the support of the contractor(s) 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. Relevant obligations and procedures in relation to advance notice of works will be identified in the Communications Management Plan.

All notifications will detail the nature, estimated duration and working hours. All notifications will include a project-specific contact number to which any enquires can be directed. The developer, with the support of the contractor(s) will be responsible for preparing and issuing the notifications subject. Prior to the commencement of construction works in proximity to any licensed or industrial facilities, discussions will be held with management of the facility to confirm the optimum time to carry out the works.

The Employer's Representative and the contractor(s), in consultation with statutory stakeholders, will decide whether to arrange any further targeted consultation with the public or relevant stakeholders in advance of specific construction activities on a local basis.

8.2. Environmental Complaints

The developer with the support of the contractor(s) will establish a process for handling all enquiries, including complaints. All enquiries will be recorded, and a log will be maintained to include details of the response and action taken. This will be available upon request for inspection to statutory stakeholders. All enquiries, whether a query or a complaint, will be dealt with in a timely manner. The contractor(s) will inform the supervising Resident Engineer (RE) of all enquiries, including complaints.

The EnCoW will be immediately informed of any environmental-related issues that have been raised. Where appropriate, the EnCoW will be responsible for informing relevant stakeholders and statutory bodies.

Appendices

1. Appendix A: Construction Traffic Management Plan
2. Appendix B: Construction Resource and Waste Management Plan
3. Appendix C: Outline Communications Management Plan

Appendix A: Construction Traffic Management Plan

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1. Introduction

This Construction Traffic Management Plan (CTMP) supports the Traffic and Transportation chapter of the Environmental Impact Assessment Report (EIAR) for the proposed North Irish Sea Array (NISA) offshore wind farm, hereafter referred to as the ‘proposed development’.

This CTMP relates to road traffic associated with the construction of the onshore infrastructure of the proposed development. The contractor will further develop and update this CTMP, prior to construction, in accordance with the requirements set out in this document. In this section the purpose and scope of the document is further explained along with the implementation requirements and the requirements to revise the document on an ongoing basis.

1.1 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 development.

The objectives of this CTMP are 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.
- Outline minimum road safety 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 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.

Measures are recommended 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. 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.

In the event that the 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 the local authorities (Fingal County Council and Dublin City Council) and An Garda Síochána.

This CTMP will remain a live document that will be reviewed by the contractor and updated, where necessary, throughout the construction phase.

1.2 Implementation

Key to the implementation of the CTMP is the dedication of an on-site manager (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 plan 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 ensure compliance with the requirements of the site’s CTMP.

The Contractor’s CTMP will be agreed with the relevant local authorities and An Garda Síochána.

1.3 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. Potential Construction Phase Effects and Mitigation Measures

The CTMP is developed to manage and mitigate against the impacts of the construction phase as discussed in Volume 4, Chapter 24: Traffic and Transportation.

The construction strategy will result in additional construction traffic at the landfall and grid facility area and also along the onshore cable route. The construction strategy includes a number of full and partial road closures along the onshore cable route to facilitate the construction of the onshore cable route within the road reserve.

The expected impact of the construction of the onshore infrastructure is therefore as follows:

- The projected impact on traffic operations along the R132 at the landfall and grid facility area and along the onshore cable route
- The impacts of road closures on:
 - Local diversion route operations as a result of local traffic rerouting associated with temporary road closures
 - Strategic diversion route operations as a result of strategic traffic rerouting associated with temporary road closures
 - Bus Services – where routes and in some cases, bus stop locations, will need to alter as a result of temporary road closures
- The impact of the delivery of abnormal loads on traffic operations along the R132 at the landfall and grid facility area and along the onshore cable route.

The traffic assessment identified a number of mitigation measures to mitigate against any impacts. These included embedded mitigation measures in the construction strategy (such as the duration and sequencing of construction activities, identification of delivery routes, provision of parking and identification of diversion routes). Additional mitigation measures related to the deployment of additional crews to limit the duration of construction were also identified.

Notwithstanding, the traffic assessment determined that with the implementation of mitigation measures there will remain a temporary significant residual impact during the construction phase on local and strategic diversion route operations, from both the partial and full road closures associated with the proposed development.

3. Specific Requirements

The contractor will be required to ensure that the contents of this CTMP are further developed prior to the commencement of works. The updated CTMP will address the following issues:

1. Site/works area access and egress;
2. Site Management;

3. Traffic management signage;
4. Timings of material deliveries to site;
5. Traffic management speed limits;
6. Road and Vehicle cleaning;
7. Road condition;
8. Road closures;
9. Enforcement of traffic management plan;
10. Emergency procedures during construction; and
11. Communication.

These items are explained in detail in the remainder of this section of the plan. The requirements are based on the embedded mitigation measures and additional mitigation measures outlined in Volume 4, Chapter 24: Traffic and Transportation and recommendations based on best practice.

3.1 Site Access and Egress

The Contractor shall adhere to the primary construction compound delivery routes and delivery routes for abnormal loads identified in Volume 4, Chapter 24: Traffic and Transportation and Volume 7, Figure 24.2. The Contractor shall also maintain local property access for car, active travel and service vehicles throughout construction.

The following traffic management measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- 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.
- The contractor will be required to inspect the delivery routes to identify any issues and propose remedial measures as part of the permitting requirements for abnormal loads. This should include a swept path analyses for the contractor's specific vehicle type and weight (dimensions to be confirmed) to ensure that the specific abnormal load can be transported safely.
- Temporary traffic arrangements will be in place to accommodate wide turning circles at compound access points, such as stop/go road closures or equivalent arrangements to maintain local access and safely accommodate through traffic
- Road Safety Audits (stage 2/3) will be carried out during detailed design and additional interim Road Safety Audits can be prepared ahead of and during construction as part of the Contractor's CTMP update, and final Road Safety Audits (stage 4) will be completed post-construction.
- No parking or queuing of trucks will be allowed on public roads, save during delivery/collection of materials (short term periods).
- The proposed site access locations will be identified and the contractor will provide advanced warning signs, in accordance with Department of Transport's 'Traffic Signs Manual, Chapter 8: Temporary Traffic Measures and Signs for Roadworks (October 2021), on the approaches to proposed site access locations, a minimum of one week prior to construction works commencing at that location.

3.2 Site Management

The Contractor shall provide adequate parking at all compounds to avoid queuing at the site entrances and prevent disruption to neighbouring businesses and residences and designated areas will be provided within the compounds for abnormal load unloading as outlined in Volume 4, Chapter 24: Traffic and Transportation.

In addition to the above the following measures are considered good practice and are to be incorporated into the Contractor's CTMP:

- 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.
- Temporary traffic arrangements will be in place at compound access points to maintain local access and safely accommodate through traffic.

3.3 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 alert road users of the works access/egress locations and the presence of construction traffic. All signage will be provided in accordance with the Department of Transport's 'Traffic Signs Manual, Chapter 8: *Temporary Traffic Measures and Signs for Roadworks* (October 2021).

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.

3.4 Timings of Material Deliveries to Site

The Contractor shall adhere to the duration and sequencing of construction activities at the landfall and grid facility area and along the onshore cable route as outlined in Volume 4, Chapter 24: Traffic and Transportation. Abnormal load deliveries restricted will be restricted to outside peak traffic times where practicable.

The following traffic management measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- Deliveries of materials will be planned and programmed to ensure that the materials are delivered to the extent possible, only as they are required at the compounds and along the onshore cable route and will avoid peak hours for set-up and removal of equipment where practicable.
- 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 compounds and at the compounds and along the cable route section.
- For any works related to the compounds or onshore cable route that require lane closures, the length of lane closure and the required working area will be kept as small as possible.
- All trucks will avoid school areas at drop off and collection times.

In addition to the above the following measures are considered good practice and are to be incorporated into the Contractor's CTMP:

- 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 the local authorities, specifically taking into account potential road repair works that are included in the 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;
- Specific construction moratoria (for example, certain busy periods) as indicated by local authorities will be respected and incorporated into the construction phasing programme;
- Construction activities will normally be undertaken during daylight hours for all construction stages. It is anticipated that at critical certain stages of the construction works night-time and weekend work will be required, subject to consultation with local authorities and An Garda Síochána.

3.5 Traffic Management and Speed Limits

The following traffic management measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- All trucks entering the compounds will be restricted to suitable speed limits and will be directed to the relevant area by the banksman.

In addition to the above the following measures are considered good practice and are to be incorporated into the Contractor's CTMP:

- 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.

3.6 Road and Vehicle Cleaning

The following traffic management measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- All trucks entering and exiting the compounds and along the onshore cable route which are carrying materials which could become windborne will be covered with tarpaulin.
- Roads immediately adjacent to the compounds will be visually inspected on a daily basis and power swept and washed as and when required.

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.

In addition to the above the following measures are considered good practice and are to be incorporated into the Contractor's CTMP:

- 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 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 principal contractor, suppliers and staff are to be confirmed and included in the updated CTMP, prior to the commencement of construction.

3.8 Road Condition

The contractor will ensure that:

- Loads of materials leaving each site will be evaluated and covered 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 offline haul routes will be monitored visually throughout the construction period and a truck mounted vacuum mechanical sweeper will be assigned to roads along the offline haul routes as required.
- In addition, the contractor will, in conjunction and through agreement with the local authorities:
 - Undertake additional inspections and reviews of the roads forming the offline haul 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 the local authorities.
- Where requested by the local authorities prior to the commencement of construction operations, pavement condition surveys will also be carried out along roads forming part of the offline haul routes. These will record the baseline structural condition of the road being surveyed immediately prior to construction.
- Throughout the course of the construction of the proposed scheme, on-going visual inspections and monitoring of the offline haul roads will be undertaken to ensure any damage caused by construction traffic is recorded and that the local authorities are notified. Arrangements will be made to repair any such damage to an appropriate standard in a timely manner such that any disruption is minimised.
- 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.

3.9 Road Closures

In order to avoid disruption to railway infrastructure and rail services between Dublin-Belfast and Dublin-Drogheda/Dundalk the Contractor shall make use of the HDD technique for the Dublin-Belfast railway crossing and similarly for the M1 motorway crossing, (to avoid any disruption to the national road network).

For the purpose of constructing and laying the cable routes, a series of full and partial road closures will be in place along the onshore development area. Diversions will be in place throughout the duration of the full road closure. Strategic diversion routes will be signposted. Local property access for car, active travel and service vehicles will be maintained throughout.

The contractor will limit full road closure durations through the deployment of multiple crews in order to increase efficiency and limit the duration of full closures.

There will also be temporary single lane closures throughout the remaining cable route sections following the public road network. For temporary single lane road closures, traffic flow will be maintained with the use of rolling temporary stop/go traffic signals throughout each section.

The full and partial road closures proposed are listed below in Table 3.1 below.

Table 3.1 Proposed Road Closures Due to Construction

| Section | Road | Closure Type | Approximate Duration of Road Closure |
|---------|-------------------------|------------------------------|--------------------------------------|
| 1 | R132 | Full (Temporary duration) | 1-2 weeks |
| 2 | Harry Reynolds Road | Partial (Temporary duration) | 15 weeks |
| 3 | R132 | Partial (Temporary duration) | 99 weeks |
| 5 | R129 | Full (Temporary duration) | 2 weeks |
| 6 | R132 | Partial (Temporary duration) | 27 weeks |
| 8 | R132 | Partial (Temporary duration) | 20 weeks |
| 9 | Spittal Hill/Lissenhall | Full (Temporary duration) | 1-2 weeks |
| 10.1 | Estuary Road | Full (Temporary duration) | 2-3 weeks |
| 10.2 | Estuary Road | Full (Temporary duration) | 3-4 weeks |
| 11 | Estuary Road | Partial (Temporary duration) | 5 weeks |
| 12 | R106 Swords Road | Full (Temporary duration) | 3-4 weeks |
| 13 | R107 Malahide Road | Full (Temporary duration) | 3-4 weeks |
| 14A | R107 Malahide Road | Full (Temporary duration) | 1-2 weeks |
| 14B | Chapel Road | Full (Temporary duration) | 2-3 weeks |
| | R124 | Full (Temporary duration) | 2-3 weeks |
| | Balgriffin Park | Full (Temporary duration) | 1 week |
| 15 | R139 | Partial (Temporary duration) | 16 weeks |

Full details of the proposed road closures are set out in Volume 4, Chapter 24: Traffic and Transportation.

The Contractor shall adhere to the local diversion routes and strategic diversion routes, where partial and full road closures will be operational as identified in Volume 4, Chapter 24: Traffic and Transportation. In addition, the Contractor shall adhere to the bus diversion routes and bus stop relocations, in case of partial and full road closures, as well as the bus prioritisation measures, in the case of partial road closures, discussed in Volume 4, Chapter 24: Traffic and Transportation.

3.10 Enforcement of Construction Traffic Management Plan

The following measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- All project staff and material suppliers will be required to adhere to the CTMP.
- The effectiveness of the CTMP will be continually monitored by the supervising employer's representative to ensure the effects on traffic flows on the surrounding road network are minimised.
- The contractor will agree and implement monitoring measures.
- The monitoring regime will consider all modes of traffic including pedestrians, cyclists and car parking provision.
- 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.

3.11 Emergency Procedures During Construction

The following traffic management measures will be incorporated into the Contractor's CTMP during the construction stage of the proposed development:

- The contractor will ensure that unobstructed access is provided for all emergency vehicles along all routes and site accesses.
- The contractor will provide to local authorities 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.

3.12 Communication

The contractor will ensure that close communication with local authorities 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 Community Liaison Officer 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. 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 Community Liaison Officer'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. Conclusion

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

The CTMP will be further developed by the contractor following consultation with An Garda Síochána and local authorities.

The Employer 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.

Appendix B: Construction Resource and Waste Management Plan

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Resource and Waste Inventory Template

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1. Introduction

1.1 Overview

This report sets out the Construction Resource and Waste Management Plan (CRWMP) prepared by Arup to support the application by North Irish Sea Array (NISA) limited (hereafter referred to as ‘the Developer’) for consent for the proposed NISA offshore wind farm (hereafter referred to as ‘the proposed development’) with offshore elements situated off the coasts of Co. Dublin, Meath and Louth and onshore elements within the boundaries of Fingal County Council and Dublin City Council.

This CRWMP has been prepared solely for the onshore elements of the proposed development.

The content presented in this CRWMP has regards to the guidance outlined in the following documents:

- Environmental Protection Agency Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects – (EPA, 2021) (Tier 2 development guidance applied) (hereafter referred to as the EPA Guidance); and
- The EU Construction & Demolition Waste Management Protocol (European Commission, 2016).

Waste management objectives, policy and legislation are outlined in this Section.

Subsequent Sections are included in this report which address the roles and responsibilities of relevant personnel (Section 0), details regarding wastes arising (Section 3.2 – Section 3.4), the costs of waste management (Section 0), waste collection (Section 4.3), waste collection (Section 4.3), waste recovery/disposal off site (Section 4.4), and record keeping (Section 4.5).

Following appointment, the contractor will be responsible for detailing and maintaining this report and updating it as appropriate. The responsibilities as set out in the EPA Guidelines are included in Appendix A.

1.2 Waste Management Objectives for the Project

The principal objective of sustainable resource and waste management is to use material resources more efficiently, where the value of products, material and resources is maintained in the economy for as long as possible such that the generation of waste is minimised. To achieve resource efficiency, there is a need to move from a traditional linear economy to a circular economy, as outlined in Image 1.

The Circular Economy and Miscellaneous Provisions Act 2022 defines the circular economy as:

- “An economic model and the policies and practices which give effect to that model in which:*
- production and distribution processes in respect of goods, products and materials are designed so as to minimise the consumption of raw materials associated with the production and use of those goods, products and materials,*
- the delivery of services is designed so as to reduce the consumption of raw materials.*
- goods, products and materials are kept in use for as long as possible thereby further reducing the consumption of raw materials and impacts harmful to the environment,*
- the maximum economic value is extracted from goods, products, and materials by the persons using them, and*
- goods, products and materials are recovered and regenerated at the end of their useful life”*

The European Union (EU) *Circular Economy Action Plan* (European Commission, 2020) notes that:

“...the EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance toward keepings its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade.”



Image 1: Simplified model of the circular economy for materials and energy (European Environment Agency, 2016)

Where waste is generated, it should be dealt with in a way that follows the waste hierarchy (refer to Image 2) and set out in Directive 2008/98/EC on waste and repealing certain Directives and Directive 2018/851 of the European Parliament and as implemented by the European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011), as amended.

The European Commission has adopted a Circular Economy Action Plan (European Commission, 2020) - one of the main blocks of the European Green Deal, Europe’s new agenda for sustainable growth. The Circular Economy Action Plan identifies construction as a key area where there are opportunities for resource efficiency and circularity.

The Department of the Environment, Climate and Communications published the Irish Waste Action Plan for a Circular Economy in September 2020 (DCCA, 2020). The Plan outlines the commitment to implement a new National Waste Action Plan providing new waste policy and giving direction to waste planning and management in Ireland.

The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The Plan includes the target of preparing for reuse, recycling, and other material recovery (including beneficial backfilling operations using waste as a substitute) of 70% by weight of Construction and Demolition non-hazardous waste (excluding natural soils & stone).



Image 2: Waste Hierarchy (European Commission)

The Department of Environment, Climate and Communications published the ‘Whole-of-Government Circular Economy Strategy 2022-2023’ (DECC, 2021) in December 2021. The Strategy aims to support and implement measures that significantly reduce Ireland’s circularity gap (i.e., a measurement of the total amounts of (re)cycled materials as a proportion of the total material inputs into the global economy each year (DECC, 2021)), so that Ireland’s rate is above the EU average by 2030.

In July 2022, the Government enacted a circular economy act entitled the ‘Circular Economy and Miscellaneous Provisions Act 2022’. This places the Strategy, and the commitment to a circular economy, on a clear statutory footing. It underpins Ireland’s shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act is a key step in the successful transition of Ireland’s economy to a circular economy and is evidence of Government’s commitment to the achievement of that goal.

It also aims to streamline the statutory mechanisms for construction and demolition material reuse which are known as ‘Regulation 27’ and ‘Regulation 28’.

The objectives of this Plan will facilitate reuse and recycling and divert waste from landfill. The content and headings used in this Plan comply with the EPA Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021).

Following appointment, the contractor will be responsible for detailing and maintaining this Plan and updating it as appropriate.

1.3 Waste Management Legislation, Policy and Guidelines

Resource and waste management takes place in a legislative framework. Applicable legislation, policy and guidelines were reviewed during preparation of this CRWMP.

The key components of EU, national and local policy, legislation, and guidelines relevant to proposed development are summarised as follows:

- Prevention and minimisation of waste is the preferred option;

- Where construction and demolition (C&D) waste is generated, it should be source separated to facilitate reuse and recycling and to maximise diversion of waste from landfill;
- Where waste may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution; and
- Waste may only be transferred by a waste collection permit holder and delivered to an authorised waste facility.

An overview of relevant legislation, policy and guidelines related to waste management is presented in Appendix 31.1 of Volume 11 of this EIAR (also presented in Appendix B of this report for ease of reference).

2. Roles and Responsibilities

Copies of the CRWMP will be made available to all relevant personnel on site. All site personnel and subcontractors will be instructed about the objectives of the CRWMP and informed of their responsibilities.

The nominated Resource Manager (RM) responsible for implementation of this CRWMP will be identified prior to construction commencement. The RM will be responsible for informing contractor staff and subcontractors of content of the CRWMP and for maintaining and keeping the Records set out in Section 4.5. In the event of the RM leaving the project team the contractor will nominate a suitable replacement.

The RM will be responsible for conducting ongoing resource audits at the site during construction. The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required.

3. Key Materials, Quantities and Costs

3.1 Introduction

Construction and Demolition (C&D) waste is defined as waste which arises from construction, renovation and demolition activities.

Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.

Typical C&D waste types which are likely to arise during the proposed site clearance, excavation and construction works, including EPA List of Wastes (LOW) codes, are set out in Appendix 31.2 of Volume 11 of this EIAR (also presented in Appendix C of this report for ease of reference).

The contractor will ensure that waste generation on site is minimised, and that waste removed from site for recovery or disposal is reduced where feasible.

3.2 Site Clearance Waste Arisings

The appointed contractor will be required to carry out site clearance works from several onshore working areas throughout the proposed development site prior to the commencement of construction. Site clearance works will be required at the landfall site, along the onshore cable route, at the grid facility, along temporary access routes and at contractor compounds.

Site clearance works will include the removal of trees, hedgerows and fences. Vegetation clearance will be kept to the minimum required to facilitate construction. Subject to agreement with landowners, as required, existing vegetation, hedgerows and / or fences will be reinstated as close as possible to their original condition, on completion of the works, with appropriate materials.

Site clearance works will result in the generation of minor quantities of C&D waste material (from fences) and organic waste material.

3.3 Excavation Waste Arisings

Excavation will be required at the landfall site, the onshore export cables, the grid facility and throughout the onshore cable route. Excavated material generated as part of the onshore elements of the construction works will generally consist of:

- Topsoil and subsoil;
- Engineered fill material (crushed stone, sand, etc.);
- HDD bore excavated materials; and
- Urban deposits (described as *soft brown, slightly sandy, slightly gravelly to clay. Sand is fine to coarse, and gravel is subangular* in Table 21.17 within Volume 4, Chapter 21: Land and Soils).

A summary of the excavated materials associated with the construction of the onshore infrastructure for the proposed development, along with estimated reuse and export quantities, is provided in Table 1. In total, it is estimated that approximately 300,500 tonnes of material will be excavated to facilitate construction of the onshore infrastructure for the proposed development. It is estimated that approximately 72,600 tonnes of this material will be reused and approximately 227,900 tonnes of this material will be exported from the site. The quantities presented in Table 1 are rounded to the nearest 10.

All material from the excavation works will need to be tested by the appointed contractor for quality and contamination. During onshore excavation works, there is the potential for encountering contaminated material (including potential asbestos containing materials). However, the majority of the samples taken during the project specific ground investigation for the proposed development indicated the presence of inert materials, with just three samples recovered classified as non-hazardous (TP09 – Landfall, TP21 – Blakes Cross and TP108 – Onshore Cable Route) and two samples recovered classified as hazardous (ST02 and ST31). Refer to Volume 4, Chapter 21: Land and Soils for further details.

Table 1: Estimated quantities of onshore excavation materials

| Material | Landfall | | | Grid facility | | | Onshore cable route | | |
|---|--------------------|-----------------|-------------------|--------------------|-----------------|-------------------|---------------------|-----------------|-------------------|
| | Excavated (tonnes) | Reused (tonnes) | Exported (tonnes) | Excavated (tonnes) | Reused (tonnes) | Exported (tonnes) | Excavated (tonnes) | Reused (tonnes) | Exported (tonnes) |
| Topsoil | 10,370 | 6,630 | 3,740 | 27,030 | 7,990 | 19,040 | 29,750 | 23,460 | 6,290 |
| Subsoil | 3,200 | 1,400 | 1,800 | 63,000 | 1,600 | 61,400 | 9,800 | 4,400 | 5,400 |
| Surface course (asphalt) | 0 | 0 | 0 | 0 | 0 | 0 | 4,080 | 2,880 | 1,200 |
| Base / binder course (asphalt) | 0 | 0 | 0 | 0 | 0 | 0 | 16,080 | 11,280 | 4,800 |
| Sub-base (crushed stone) | 0 | 0 | 0 | 0 | 0 | 0 | 18,260 | 12,980 | 1,760 |
| Capping (crushed stone) incl. compound / access track stone | 0 | 0 | 0 | 0 | 0 | 0 | 27,500 | 0 | 27,500 |
| Sub-grade | 0 | 0 | 0 | 0 | 0 | 0 | 66,220 | 0 | 66,200 |
| HDD bore material | 7,600 | 0 | 7,600 | 0 | 0 | 0 | 17,600 | 0 | 17,600 |
| Total | 21,170 | 8,030 | 13,140 | 90,030 | 9,590 | 80,440 | 189,290 | 55,000 | 134,290 |

3.4 Construction Waste Arisings

General construction waste is defined as waste which arises from construction activities, including surplus and damaged products and materials arising during construction work or used temporarily during the course of on-site activities.

General construction waste can vary significantly from site to site but typically would include the following non-hazardous fractions:

- Soil and stone;
- Concrete, brick, tiles, and ceramics;
- Asphalt/tar;
- Metals; and
- Liquid wastes (wheel-wash run-off, sanitary waste from portable toilets).

The hazardous waste streams which could arise from construction activities will include the following:

- Bituminous material;
- Waste electrical and electronic components;
- Cable materials;
- Batteries;
- Asbestos;
- Wood preservatives;
- Liquid fuels; and
- Contaminated soil.

In the case of the proposed development, the most likely type of general construction waste arising from the construction of the onshore infrastructure will be bituminous material from road excavation, surplus concrete and unusable or damaged ducting segments which will arise on site. Quantities of these materials are estimated to be small. As an example, concrete is assumed to be between approximately 5% to 10% of construction material delivered to site (WRAP, 2014). There is adequate capacity for the management of such wastes. Segregation facilities will be provided to ensure that recovery and recycling of such wastes are maximised.

Liquid wastes (such as sanitary waste or oils / lubricants) will be contained and dispatched off-site for disposal at appropriately licensed or permitted facilities

Minor quantities of general municipal waste will also be generated by construction workers during the construction phase (e.g., from site offices and welfare facilities). Segregation facilities will be provided at all working areas, if necessary, to ensure that recovery and recycling of such wastes is maximised.

The contractor will ensure that waste generation on site is minimised, and that waste removed from site for recycling, recovery or disposal is minimised, where feasible.

3.5 Onshore Resources

The construction of the onshore infrastructure for the proposed development will require the importation of several key construction materials for the proposed development works. This material will include items such as concrete, crushed stone, high density polyethylene (HDPE) ducting for the installation of the cables, road paving materials, steel and power cables.

The estimated quantity of construction materials required for the onshore infrastructure works are presented in Table 2.

Table 2: Estimated quantity of construction materials required for onshore infrastructure

| Material | Estimated quantity |
|--|-----------------------|
| Surface course (asphalt) | 1,900 tonnes |
| Base / binder course (asphalt) | 7,700 tonnes |
| Sub-base (crushed stone) | 18,900 tonnes |
| Capping (crushed stone) incl. compound / access track stone | 64,900 tonnes |
| Cement bound granular mixture | 68,400 tonnes |
| Water (HDD) | 37,800 m ³ |
| Bentonite (HDD) | 1,900 tonnes |
| Concrete for HDD anchor block (per HDD compound) | 3,100 tonnes |
| Concrete (for substation foundation / slabs) | 4,800 tonnes |
| Steel reinforcement (for substation foundations / slabs) | 150 tonnes |
| Structural steel (for substation buildings) | 300 tonnes |
| Steel cladding (for substation buildings walls / roofs) | 10,500 m ² |
| HDPE ducting | 317,000 m |
| Power cables (onshore export circuit – comprising various materials, including metals, plastics and composite materials) | 15,000 m |
| Power cables (onshore transmission circuit – comprising various materials, including metals, plastics and composite materials) | 214,800 m |
| Earthing cable (comprising various materials, including metals, plastics and composite materials) | 78,600 m |
| Fibre optic cable (comprising various materials, including metals, plastics and composite materials) | 78,600 m |
| Concrete (for joint bays, link boxes, comms chambers) | 21,600 tonnes |
| Temporary access tracks / contractor compound bases | 47,300 m ² |

The quantities of materials listed in Table 2 represent a very small proportion of the Irish quantities manufactured per year. As an example, the estimated quantity of concrete required for the construction of the onshore infrastructure for the proposed development represents less than one percent of the total quantity produced in Ireland per annum.

Importation of material to the proposed development site will be carried out throughout the construction phase, with different materials being required at different times. The main direct impacts associated with the importation of construction materials arise from the gathering / manufacture of the materials, and that once the materials are used within the proposed development, they are no longer available for other uses.

The majority of construction materials will be locally and nationally sourced, with a ready supply available.

3.6 Costs of Resource Management

As required by the Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021), this section addresses costs of resource management.

While landfill disposal has been the most commonly used method for waste management in Ireland in the past, waste to energy incinerators are also now in operation at Poolbeg, Dublin 4 and in Carranstown, County Meath.

Typically, the current cost of disposal of waste to landfill in Ireland exceeds €170 per tonne. In accordance with the Waste Management (Landfill Levy) Regulations 2015, the ‘landfill levy’ is €75 per tonne for waste disposed to landfill. Disposal of hazardous waste can cost from €350 upwards.

In addition to landfill operator fees and landfill levies there are additional costs included in the ‘true cost of resource management’ including:

- The purchase cost of waste materials (including imported soil);
- Handling costs;
- Storage and transportation costs; and
- Revenue generated from sales.

Therefore, in order to reduce costs associated with resource management, surplus materials should be reused and recycled where possible, and materials should be carefully stored and handled to minimise risk of damage.

4. Site Management

The contractor will ultimately be responsible for the management of resources on a project and agreeing and revising as necessary any commitments or targets included in the CRWMP developed at design / planning with the Client for acceptance and adoption in the CRWMP for construction.

The contractor will allocate responsibility for resource management to one or more individuals of sufficient seniority to put the relevant procedures into practice. The contractor will nominate a suitably qualified RM with expertise in waste and resource management to implement the CRWMP.

The nominated RM responsible for implementation of this CRWMP will be identified prior to construction commencement.

Copies of the CRWMP will be made available to all relevant personnel on site.

All site personnel and sub-contractors will be provided with a copy of the CRWMP and will be informed of the objectives of the CRWMP and their responsibilities in relation to compliance with the CRWMP.

The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required and that the RWMP is included in site induction training.

The RM will be responsible for informing contractor staff and sub-contractors of content of the CRWMP and for maintaining and keeping the Records set out below.

In the event of the RM leaving the project team the contractor will nominate a suitable replacement.

4.1 Site Clearance and Excavation Waste Management

Segregation facilities will be provided for C&D waste materials arising from the site clearance works, where necessary, and if not suitable for reuse, these materials will be removed by a waste collection permit holder and delivered to an authorised recycling, recovery facility or disposal facility. The least preferable option is disposal to an authorised and this will only be considered by the appointed contractor when reasonable opportunities for reuse, recycling and recovery are unavailable.

All organic waste (such as trees and vegetation) requiring removal from site will be removed by a waste collection permit holder and delivered to an authorised composting or organic waste facility.

Possibilities for re-use of clean, non-hazardous excavation material in construction works, as fill on site will be considered following appropriate testing to ensure the material is suitable for its proposed end use. Should such suitable material arise and be re-used on site it will be exempt from waste regulations.

Material excavated in the course of the construction works which is not suitable for reuse on site, or surplus to requirements, will be tested and classified where feasible for reuse on other construction site(s) as per Regulation 27 Regulations. Where the material is not suitable for reuse it will be categorised in accordance with the EPA List of Waste and Determining if Waste is Hazardous or Non-hazardous (EPA, 2018).

Waste may only be transferred from site by a waste collection permit holder and delivered to an authorised waste facility (i.e., a facility which holds a Certificate of Registration, Waste Facility Permit or Waste Licence) for the specific waste types it receives.

Where removal from site of construction by-products for further use is proposed, this will take place in compliance with Regulation 27 of the European Communities (Waste Directive) Regulations, 2020, where appropriate. The contractor will be responsible for ensuring compliance with this Regulation where appropriate.

Where excavated material containing hazardous substances is discovered as part of the proposed development, this will be delivered to a facility authorised to accept hazardous wastes. It may be exported from Ireland for treatment, recovery or disposal. Export of hazardous waste from the proposed development outside of the State is subject to a Europe-wide control system founded on Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on Shipments of Waste ('the Transfrontier Shipment Regulations'). This legislation is supplemented by the Waste Management (Shipments of Waste) Regulations 2007, as amended (S.I. No. 419 of 2007), 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.

As noted in Section 1, following appointment, the contractor will be responsible for detailing and updating this CRWMP. The detailed CRWMP will include a description of how site clearance and excavation material from the proposed development will be managed. A full list of all facilities to which uncontaminated site clearance and excavation material will be sent will be provided in the detailed CRWMP.

4.1.2 Regulation 27

Surplus excavation material may be declared a by-product under Regulation 27 of the European Union (Waste Directive) Regulations, 2020, (Regulation 27) for reuse in one or more known construction projects.

By-product notifications to the EPA provide an opportunity for reuse of surplus clean soil and stone material arising from construction activity. This can apply to locations other than authorised recovery facilities e.g., quarries operating under planning permission, parks or other developments requiring earthworks and importation of clean soil and stone. This option can bring significant economic benefits while facilitating beneficial re-use of by-products. This plays a role in Ireland's implementation of Circular Economy principles.

A Regulation 27 notification to the EPA under Regulation 27 (S.I. No. 323/2020) European Union (Waste Directive) Regulations 2020 is required to achieve by-product status for soil and stones. It is noted that the use of Regulation 27 is limited to clean soil and stone, and it must be demonstrated to the EPA that the following four conditions are met:

- further use of the soil and stone is certain;
- the soil and stone can be used directly without any further processing other than normal industrial practice;
- the soil and stone is produced as an integral part of a production process; and
- further use is lawful in that the soil and stone fulfil all relevant requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

Where it is proposed to use a Regulation 27 EPA notification in relation to excavation material from the proposed development, the contractor is responsible for submission of the Regulation 27 notification to the EPA. Where it is proposed to use soil from off-site with a Regulation 27 notification, the contractor is responsible for carrying out any necessary due diligence regarding the material and ensuring that all EPA guidelines relating to that Regulation 27 notification have been complied with before the soil is imported into the site. Where feasible, appropriate, and available Regulation 27 materials arising from other sites will be used in the development throughout the site.

The contractor is responsible for ensuring all applicable regulatory requirements under waste, planning and other laws are complied with prior to movement of excavation material.

4.1.3 Soil Recovery at Sites Holding Waste Facility Permits or EPA Waste Licences

Where removal of wastes from the proposed development is unavoidable it will be delivered by the contractor only to facilities which are authorised under the Waste Management Act, 1996, as amended, and which hold the appropriate certificate of registration, waste facility permit or EPA waste licence.

The Waste Management (Facility Permit and Registration) Regulations 2007, as amended sets out the classes of waste activity requiring waste facility permits and certificate of registration. The most relevant class of activity in relation to soil recovery facilities is:

Class 5 (Third Schedule, Part 1 of the Regulations) for the “*Recovery of excavation or dredge spoil, comprising natural materials of clay, silt, sand, gravel or stone and which comes within the meaning of inert waste, through deposition for the purposes of the improvement or development of land, where the total quantity of waste recovered at the facility is less than 100,000 tonnes.*”

For sites which hold a certificate of registration or waste facility permit, the capacity is typically a lifetime capacity, and when reached, the facility typically closes. Certificates of registration and waste facility permits are granted to private operators by local authorities.

EPA licensed waste activities authorised to accept soil and stones for recovery and disposal include soil recovery sites, landfills, transfer stations and materials recovery facilities. These typically handle a larger tonnage of wastes than facilities holding certificates of registration or waste facility permits.

EPA waste licences typically include an annual maximum intake capacity and a maximum lifetime capacity for the licenced facility.

Where the contractor proposes to deliver excavated materials from the proposed development to facilities holding a certificate of registration, waste facility permit or EPA waste licence, the contractor is responsible for ensuring the authorisation is valid and allows acceptance of the relevant List of Waste Code.

A copy of the authorisation will be included in the CRWMP, and evidence will be provided that the proposed facility will have capacity to accept the required quantity of waste from the proposed development.

4.2 Construction Waste Management

The contractor shall take the following measures to prevent waste, facilitate recycling and minimise waste disposal during the construction phase:

- Where waste generation cannot be avoided, waste disposal will be minimised;
- 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 by clearly labelling waste types;
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate;
- Materials on-site will be correctly and securely stored;
- Paints, sealants and hazardous chemicals will be stored in secure, bunded locations;
- All staff on-site will be trained on how to minimise waste (i.e., training, induction, inspections, and meetings);
- Waste generated from on-site offices will be source separated at least into residual waste, dry mixed recyclables and organic waste;
- Opportunities for reuse of materials, by-products and wastes will be sought throughout the construction phase of the proposed development;
- Possibilities for reuse of clean non-hazardous excavation material as fill on the site will be considered following appropriate testing to ensure material is suitable for its proposed end use;

- Where excavation material cannot be reused within the proposed development, the appointed contractor will endeavour to send material offsite for reuse as a by-product, recovery or recycling, in so far as is reasonably practicable;
- Any identified contaminated material 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;
- If encountered, any potential asbestos during the construction phase will be managed using standard health and safety measures as outlined in ‘Asbestos-containing Materials (ACMs) in Workplaces: Practical Guidelines on ACM Management and Abatement’ (HSA, 2013). This document states that “*removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed*” and “*a risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies*” (HSA, 2013);
- The appointed contractor will record the quantity in tonnes and types of waste and materials leaving the site during the construction phase. 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, which is recycled, and which is disposed of;
- Waste generated on-site will be removed as soon as practicable following generation for delivery to an authorised waste facility;
- The appointed contractor will ensure that any off-site interim storage facilities for excavation material have the appropriate waste licences or waste facility permits in place;
- Where Regulation 27 notifications are required in relation to the proposed development, the appointed contractor will complete and submit these Regulation 27 notifications to the EPA for by-product reuse;
- The relevant appropriate waste authorisation will be in place for all facilities that wastes are delivered to (i.e., certificate of registration, waste facility permit and / or EPA waste licence); and
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site.

The appointed contractor will be required to produce a detailed CRWMP prior to commencement of the proposed works. This will include the names, addresses and authorisation details of the facilities to which waste from the proposed development will be delivered. Appendix D provides further details of the information which shall be contained in the detailed CRWMP.

4.3 Waste Collection

Waste from construction will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended.

A list of currently authorised waste collectors is available on the following website:

<https://www.nwcpo.ie/permitsearch.aspx>

An up-to-date list of all waste collectors used to transport waste from site during the proposed development will be maintained on site and updated by the contractor. Copies of valid appropriate waste collection permits will be held on site by the contractor.

4.4 Waste Recovery and Disposal Off-site

Management Acts 1996 to 2011, as amended.

The following authorisations are applicable:

- Certificates of Registration (CoR) from the Local Authority (issued to private sector);
- CoR from the EPA (issued to Local Authority);
- Waste Facility Permit (WFP) from the Local Authority; and

- Waste or industrial emissions licence from the EPA.

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

Lists of sites currently licensed by the EPA (industrial emissions or waste licence) are available on the following websites:

- <https://epawebapp.epa.ie/terminalfour/waste/index.jsp> (for waste licensed sites); and
- <https://epawebapp.epa.ie/terminalfour/ippc/index.jsp> (for industrial emission licensed facilities).

An up-to-date list of all waste facilities to which waste from the site will be delivered will be maintained on site and updated by the contractor. Copies of valid facility certificates of registration, waste facility permits and waste licences will be held on site by the contractor.

4.5 Record Keeping and Auditing

The appointed RM will arrange for audits to be completed throughout the proposed development prior to any construction works commencing and during the construction works. Audits will be of all existing structures and hard surfaces within the proposed development site which will be impacted by the works. The audits will identify and quantify the key materials associated with the proposed development, outline potential reuse and recycling applications for these materials, identify reuse, recycling and landfill diversion targets for these materials and identify potential local recovery and recycling facilities to which these materials may be delivered.

The contractor will record the quantity in tonnes and types of waste and materials leaving the development site during site clearance, excavation and construction of the proposed development. Quantities will be regularly reviewed and compared with targets set during initial audits.

The name, address and authorisation details of all facilities and locations to which waste and materials from the proposed development are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility and the date of the waste movement. Records will show material which is recovered and disposed of.

A sample resource and waste inventory as included in the EPA Guidance is included in Appendix E.

5. Site Infrastructure

The following infrastructure requirements must be adopted by the contractor at construction stage:

- While earthworks are underway, sufficient space will be made available for wastes, by-products and material storage, as necessary. It will be the responsibility of the contractor to ensure all necessary relevant waste authorisations are in place for any such storage in accordance with the Waste Management Act, 1996 as amended;
- Waste storage areas may include stockpiles (for soil and stone, aggregates, etc.), skips (for metals, wood, glass, etc.) or secure containers for hazardous materials which will require the waste authorisations outlined above. All waste storage areas should be assessed as fit for purpose and should be suitably contained, bunded or defined as required;
- The waste storage areas should be set out to reduce any potential for impact on sensitive human (e.g. residential) or natural (e.g. water courses) receptors and a suitable buffer should be applied to mitigate any impact;
- Labelling and signage shall be used on site to inform personnel of key waste storage area requirements and restrictions with clear signage provided;
- Signage is also required to provide information to assist good resource practice across the site; and

- In relation to resource storage, the Waste Management Act 1996, as amended, allows for the temporary storage of resources defined as ‘waste’ at the site where it was produced. The Act defines the phrase ‘the temporary storage of waste’ limiting it to having a six-month duration.

6. References

DCCAIE (2020). *A Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025*.

DECC (2021a). *Whole-of-Government Circular Economy Strategy*.

EPA (2021) *Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects*.

EPA (2018). *Waste Classification – List of Waste and Determining if Waste is Hazardous or Non-Hazardous*.

European Commission (2020). *EU Circular Economy Action Plan. A new Circular Economy Action Plan for a Cleaner and More Competitive Europe*.

European Commission (2018). *EU Construction and Demolition Waste Protocol and Guidelines*.

European Commission (2016). *EU Construction and Demolition Waste Management Protocol*.

Directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste.

Number 26 of 2022 - Circular Economy and Miscellaneous Provisions Act 2022.

Regulation (EC) No. 1013/2006 of the European Parliament and of the Council of 14 June 2006 on Shipments of Waste (the Transfrontier Shipment Regulations).

Number 10 of 1996 - The Waste Management Act 1996, as amended.

S.I. No. 323/202 - European Communities (Waste Directive) Regulations 2020.

S.I. No. 419/2007 - Waste Management (Shipments of Waste) Regulations 2007.

S.I. No. 820/2007 - Waste Management (Collection Permit) Regulations 2007, as amended.

S.I. No. 821/2007 - Waste Management (Facility Permit and Registration) Regulations 2007, as amended.

S.I. No. 86 of 2008 - Waste Management (Facility Permit and Registration) Regulations 2008, as amended.

Appendix A

Responsibilities as set out in the EPA Guidelines

The contractor procured by the Client to undertake the construction operations is responsible for the following:

- Preparing, implementing and reviewing the CRWMP through construction (including the management of all suppliers and sub-contractors) as per the requirements of these guidelines;
- Identifying a designated and suitably qualified Resource Manager (RM) who will be responsible for implementing the CRWMP;
- Identifying all hauliers to be engaged to transport each of the resources / wastes off-site. Note that any resource that is legally a 'waste' must only be transported by a haulier with a valid Waste Collection Permit (refer to Appendix F of the Guidelines for a resource to find a suitably permitted local haulier);
- Identifying all destinations for resources taken off site. As above, any resource that is legally a 'waste' must only be transported to a facility with a valid Cert of Registration, Waste Facility Permit or Waste / Industrial Licence (refer to Appendix F of the Guidelines for a resource to find a suitably authorised facility);
- Maintaining full records of all resources (both wastes and other resources) should be maintained for the duration of the project; and
- Preparing a CRWMP Implementation Review Report at project handover.

Appendix B

Legislation, Policy and Guidelines

European Legislation

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives (Text with EEA relevance)

Directive 2008/98/EC, known as the “Waste Framework Directive” came into force on 12th December 2008, and Ireland had two years from this date to implement it into national law. It provides for a general framework of waste management requirements and sets the basic waste management definitions for the EU.

The Directive lays down the five-step hierarchy of waste management options, with waste prevention as the preferred option, followed by re-use, recycling, recovery and safe disposal, in descending order. In addition, the Directive also deals with the issue of ‘end of waste’ and clarifies the definitions of recovery, disposal and by-product. The directive states that, “The recovery of waste and the use of recovered material as raw materials should be encouraged in order to conserve natural resources.”

Directive 2008/98/EC amending Directive 2008/98/EC on waste

This Directive amends the Waste Framework Directive or Directive 2008/98/EC. It provides a number of updated waste management definitions. The Directive allows Member States to use economic instruments including taxes and levies as an incentive for the application of the waste hierarchy. The Directive was transposed into national law in August 2020 - S.I. No. 322 of 2020.

The Directive sets targets for the preparing for re-use and the recycling of municipal waste as follows:

- By 2025, at a minimum 55% (by weight) will be prepared for re-use or recycling;
- By 2030, at a minimum 60% (by weight) will be prepared for re-use or recycling; and
- By 2035, at a minimum 65% (by weight) will be prepared for re-use or recycling.

With regards construction and demolition waste, Member States must take measures to promote selective demolition in order to enable removal and safe handling of hazardous substances, facilitate re-use and high-quality recycling. It obligates Member States to take measures to prevent waste generation including reduction of waste generation in processes related to construction and demolition, taking into account best available techniques.

Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC) and Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives

This decision (referred to as ‘the List of Waste’ (LoW)) and regulation consolidate the legislation relating to waste classification and allow the generators of waste to classify the waste as hazardous or non-hazardous and in the process assign the correct List of Waste entry codes. Each list of waste entry is a six-digit code which is closely linked to the list of the main characteristics which render waste hazardous contained in Annex III to the Waste Framework Directive. It is noted that Council Regulation (EU) 2017/997 of 8 June 2017 amending Annex 111 to Directive 2008/98//EC of the European parliament and of the Council as regards the hazardous property HP 14 ‘Ecotoxic’ provides additional criteria in relation to determining whether the ecotoxicity of wastes would result in a hazardous classification.

National Legislation

Circular Economy and Miscellaneous Provisions Act 2022

The Circular Economy and Miscellaneous Provisions Act 2022 aims to place the Whole-of-Government Circular Economy Strategy 2022-2023, and the commitment to a circular economy, on a clear statutory footing.

This Act places the Strategy and the commitment to a circular economy on a clear statutory footing. It underpins Ireland’s shift from a “take-make-waste” linear model to a more sustainable pattern of production and consumption, that retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions.

The Act is a key step in the successful transition of Ireland's economy to a circular economy and is evidence of Government's commitment to the achievement of that goal.

Waste Management Acts, 1996, as amended and Regulations Made under the Acts

The Waste Management Act, 1996 was enacted in May 1996 and sets out the responsibilities and functions of various persons in relation to waste. This was subsequently amended by a number of subsequent acts including the Waste Management (Amendment) Act 2001 and the Protection of the Environment Act 2003. The Act:

- Prohibits any person from holding, transporting, recovering or disposing of waste in a manner which causes or is likely to cause environmental pollution;
- Requires any person who carries on activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimise the production of waste;
- Prohibits the transfer of waste to any person other than an authorized person (i.e. a holder of a waste collection permit or a local authority);
- Requires the Environmental Protection Agency (EPA) to make a national plan in relation to hazardous waste;
- Requires local authorities to make waste management plans in relation to non-hazardous waste;
- Imposes certain obligations on local authorities to ensure that a service is provided for collection of household waste and to provide facilities for the recovery and disposal of such waste;
- Enables the Minister for the Environment and Local Government to make Regulations for various purposes to promote better waste management; and
- Provides for substantial penalties for offences including fines, imprisonment and/or liability for clean-up measures.

Waste Management (Collection Permit) Regulations, 2016, S.I. No 820 of 2007, as amended

Waste from the proposed development may only be collected by the holder of a waste collection permit or a local authority. Waste collection permits are granted in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended. Waste storage and collection areas on site should be designed to prevent environmental pollution. These regulations were amended and updated in 2008, 2012 and 2016.

Waste Management (Shipments of Waste) Regulations 2007, S.I. No. 419 of 2007

Where waste from the proposed development is exported outside of Ireland for recovery or disposal the National Transfrontier Shipment (TFS) Office within Dublin City Council must be notified. Certain financial guarantees must be in place and a certificate issued by the National TFS Office prior to the waste movement taking place.

S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020 amending European Communities (Waste Directive) Regulations 2011, S.I. No.0126 of 2011

The amended regulations which were adopted in 2011 significantly changed the provisions of the Waste Management Acts, 1996 to 2008.

The 2011 regulations are now amended by S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2020 giving effect to Directive 2018/8511 of the European Parliament and of the Council of 30 May 2018 on waste as per the above. This amends definition of "waste" and "non-hazardous waste."

The Regulations define "waste disposal" and "waste recovery" as well as setting out tests which must be complied with in order for material to be described as a "by-product" or achieve "end of waste" status.

The Regulations formally set out the following waste hierarchy which shall apply as a priority order in waste prevention and management legislation and policy:

- a. Prevention;
- b. Preparation for re-use;
- c. Recycling;
- d. Other recovery (including energy recovery); and
- e. Disposal.

The Regulations require that all waste management plans and hazardous waste management plans in existence at the commencement of the Regulations shall be evaluated by 31 December 2012 and where appropriate be revised to be brought into line with Directive 2006/12/EC on Waste.

The Regulations also require the Environment Agency to establish a waste prevention programme by December 2013.

European Union (Waste Directive) Regulations 2020 S.I. No. 323/2020

These regulations give effect to Directive 2018/8511 of the European Parliament and of the Council of 30 May 2018 on waste as per the above.

This provides new definitions for a number of key terms including “waste” and “non-hazardous waste”, “biowaste”, “waste management”, “waste prevention”, “backfilling” and “construction and demolition waste”.

European Policy

8th Environmental Action Programme, European Commission (2022)

The 8th Environmental Action Programme came into force in May 2022 and will guide European environment policy until 2030 and will form the basis for achieving the United Nation’s 2030 Agenda and its Sustainable Development Goals. A key objective of the programme reiterates the EU’s long-term vision of living well and within planetary boundaries by 2050. There is a special focus on turning waste into a resource, with more prevention, re-use and recycling, and phasing out wasteful and damaging practices like landfilling. By 2030, there are six priority objectives for the European Union and member states:

- Achieving the 2030 greenhouse gas emission reduction target and climate neutrality by 2050;
- Enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change;
- Advancing towards a regenerative growth model, decoupling economic growth from resource use and environmental degradation, and accelerating the transition to a circular economy;
- Pursuing a zero-pollution ambition, including for air, water and soil and protecting the health and well-being of Europeans;
- Protecting, preserving and restoring biodiversity, and enhancing natural capital; and
- Reducing environmental and climate pressures related to production and consumption (particularly in the areas of energy, industry, buildings and infrastructure, mobility, tourism, international trade and the food system).

European Commission Circular Economy Strategy (2015; 2018; 2020)

In December 2015, the European Commission adopted an ambitious Circular Economy Package, which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy.

The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials. The annex to the action plan sets out the timeline when the actions will be completed.

The proposed actions will contribute to "closing the loop" of product lifecycles through greater recycling and re-use and bring benefits for both the environment and the economy. The revised legislative proposals on waste set clear targets for reduction of waste and establish an ambitious and credible long-term path for waste management and recycling. Key elements of the revised waste proposal include:

- An EU target for recycling 65% of municipal waste by 2030;
- An EU target for recycling 75% of packaging waste by 2030;
- A target to reduce landfill to maximum of 10% of all waste by 2030;
- A ban on landfilling of separately collected waste;
- Promotion of economic instruments to discourage landfilling;
- Simplified, improved definitions and harmonised calculation methods for recycling rates throughout the EU;
- Concrete measures to promote re-use and stimulate industrial symbiosis - turning one industry's byproduct into another industry's raw material; and
- Economic incentives for producers to put greener products on the market and support recovery and recycling schemes (e.g., for packaging, batteries, electric and electronic equipment, vehicles).

The Circular Economy Package was updated in 2018 to comprise a new set of measures including:

- A Europe-wide EU Strategy for Plastics in the Circular Economy;
- A Communication on options to address the interface between chemical, product and waste legislation;
- A Monitoring Framework on progress towards a circular economy at EU and national level; and
- A Report on Critical Raw Materials and the circular economy.

Key legislative measures adopted to date under the plan include:

- Directive (EU) 2018/851 amending Directive 2008/98/EC on waste;
- Directive (EU) 2018/850 amending Directive 1999/31/EC on the landfill of waste;
- Directive (EU) 2018/852 amending Directive 94/62/EC on packaging and packaging waste; and
- Directive (EU) 2018/849 amending Directives 2000/53/EC on end-of-life vehicles, Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators, and Directive 2012/19/EU on waste electrical and electronic equipment.

European Commission, 2020. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – A new Circular Economy Action Plan For a cleaner and more competitive Europe. COM (2020).

The European Commission has adopted a new Circular Economy Action Plan, which is one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth.

The new Action Plan announces initiatives along the entire life cycle of products, targeting for example their design, promoting circular economy processes, fostering sustainable consumption, and aiming to ensure that the resources used are kept in the EU economy for as long as possible.

The new Action Plan introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value.

- The new Circular Economy Action Plan presents measures to:
- Make sustainable products the norm in the EU;
- Empower consumers and public buyers;

- Focus on the sectors that use most resources and where the potential for circularity is high such as: electronics and ICT; batteries and vehicles; packaging; plastics; textiles; construction and buildings; food; water and nutrients;
- Ensure less waste;
- Make circularity work for people, regions, and cities; and
- Lead global efforts on circular economy.

European Commission (2019) European Green Deal

The European Green Deal, published by the European Commission in December 2019, provides an action plan to boost the efficient use of resources by moving to a clean, circular economy while cutting pollution and restoring biodiversity.

The plan outlines investments needed and financing tools available. It explains how to ensure a just and inclusive transition.

National Policy

The National Waste Management Plan for a Circular Economy 2024-2030

The National Waste Management Plan for a Circular Economy 2024-2030 was published in March 2024 and replaces the Regional Waste Management Plans (see below). The plan sets out a framework for the prevention and management of waste in Ireland for the period 2024 to 2030.

The plan recognises climate change as a key driver for both behavioural change and improved waste management practices. The ambition of the plan is 0% total waste growth per person over the life of the plan with an emphasis on non-household wastes including waste from commercial activities and the construction and demolition sector. This ambition is underpinned with a comprehensive series of targets, policies, actions and a suite of key deliverables.

Key challenges identified in the plan include resources, organisational capability, policy requirements, specific material stream targets, the provision of infrastructure and waste generation.

The plan aims to shift Ireland towards a more circular economy where resources are reused or recycled as much as possible and therefore waste generation is minimised. Maintaining and enhancing existing waste services will provide a platform for improved circular behaviours and practices to accelerate the transition to a more circular economy. A successful circular economy will improve consumption behaviours and reduce waste generation and will have wider environmental benefits through reduced greenhouse gas emissions and reduced biodiversity loss.

Climate Action Plan 2024

The Climate Action Plan (CAP) 2024 represents the third annual update to Ireland's CAP 2019 and was published on 20th December 2023. CAP 2024 establishes sectoral emission ceilings and the implementation of carbon budgets and represents a roadmap to halve Ireland's emissions by 2030 and reach net zero by no later than 2050.

CAP 2024 notes that Ireland currently has a circularity rate of 1.8% which is below the EU average of 12.8% and indicates significant capacity for improvement.

Several actions are presented in CAP 2024 which are of direct relevance to the proposed development.

A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020-2025

This plan is a roadmap for Ireland's waste planning and management. This plan shifts focus away from waste disposal and looks instead to how we the preservation of resources through the creation of a circular economy.

The plan sets out a range of aims and targets for the State and the measures by which these will be achieved, including increased regulation and measures across various waste areas such as Circular Economy,

Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

Section 11 of the plan sets out the delivery roadmap to achieve the targets, policies and actions identified to reach the plan's ambition within the Construction and Demolition Sector.

Of the challenges facing the sector, the plan establishes the target to prepare for reuse, recycling and other material recovery (including beneficial backfilling operations using waste as a substitute) of 70% by weight of construction and demolition non-hazardous waste (excluding natural soils and stone).

Regional Policy

The Eastern Midlands Region Waste Management Plan 2015-2021

For the purposes of waste management planning, Ireland is now divided into three regions: Southern, Eastern-Midlands, and Connacht-Ulster.

The Eastern-Midlands Region includes all of the Dublin Local Authority areas (Dublin City Council, Dún Laoghaire-Rathdown County Council, Fingal County Council and South Dublin County Council), as well as Kildare, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Council areas.

The Eastern Midlands Region Waste Management Plan 2015-2021 was launched in 2015. The strategic approach of the plan places a stronger emphasis on preventing wastes and material reuse activities. Three strategic targets have been set in the plan which include:

- 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan;
- Achieve a recycling rate of 50% of managed municipal waste by 2020; and
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill in favour of higher value pre-treatment processes and indigenous recovery practices.

The plan looks to 2030 and includes a long-term goal of reaching a recycling rate of 60%.

It should be noted that the Eastern Region Waste Management Plan 2015 - 2021 was recently replaced by the 'National Waste Management Plan for a Circular Economy 2024-2030' in March 2024 (see above).

Construction and Demolition Waste Soil and Stone Recovery / Disposal Capacity – Eastern Midlands Region / Connacht Ulster Region / Southern Region and RPS (2016)

This report was undertaken on behalf of the Irish regional waste management offices to analyse the national waste capacity market for safe treatment of waste soils. A review was undertaken of soil waste generation and available capacity to accept soil waste in authorised facilities within the three waste regions. The report identifies that the future authorised capacity available to recover soil and stones is an issue in each waste region in the context of likely strong construction activity. Possible options recommended include existing capacities at existing sites and the use of Regulation 27 By Product notifications.

Dublin City Development Plan 2022-2028

The Dublin City Development Plan sets out Dublin City's policies and objectives for the development of the City over the Plan period. Dublin City Council include a number of objectives within Chapter 3 Climate Action which seek to promote the circular economy and include the following:

CA23 The Circular Economy

To support the shift towards the circular economy approach as set out in a Waste Action Plan for a Circular Economy 2020 to 2025, Ireland's National Waste Policy, as updated together with The Whole of Government Circular Economy Strategy 2022- 2023.

CA24 Waste Management Plans for Construction and Demolition Projects

To have regard to existing Best Practice Guidance on Waste Management Plans for Construction and Demolition Projects as well as any future updates to these guidelines in order to ensure the consistent application of planning requirements.

In addition, Chapter 9 Sustainable Environmental Infrastructure and Flood Risk includes several objectives to align with the Eastern Midlands Regional Waste Management Plan. Those relevant to the proposed development include the following:

S127 Sustainable Waste Management:

To support the principles of the circular economy, good waste management and the implementation of best practice in relation to waste management in order for Dublin City and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective. To support opportunities in the circular resource efficient economy in accordance with the National Policy Statement on Bioeconomy (2018).

S128 Sustainable Waste Management:

To prevent and minimise waste generation and disposal, and to prioritise prevention, recycling, preparation for reuse and recovery in order to develop Dublin as a circular city and safeguard against environmental pollution.

SI016 Eastern-Midlands Region Waste Management Plan

To support the implementation of the Eastern Midlands Regional Waste Management Plan 2015–2021 and any subsequent plans in order to facilitate the transition from a waste management economy towards a circular economy.

Fingal County Council Development Plan 2023-2029

The Fingal Development Plan sets out the strategic vision to drive the sustainable growth of the region within the lifetime of the Plan. The Plan outlines Fingal County Council's approach to waste management to ensure adherence to the EU Waste Hierarchy and the circular economy.

The policies and objectives listed within the Plan were prepared in line with the Eastern Midlands Region Waste Management Plan and the National Waste Management Plan for a Circular Economy preparing the policies and objectives within the Plan. The policies of relevance to the proposed development are:

CAP25 – Circular Economy

Support the shift towards the circular economy approach as set out in the National Waste Policy for 2020–2025.

CAP26 – Waste Management Plans for Construction and Demolition Projects

Have regard to existing Best Practice Guidance on Waste Management Plans for Construction and Demolition Projects as well as any future updates to these Guidelines in order to ensure the consistent application of planning requirements.

DAP24 – Transitioning to a Low Carbon Economy

Ensure that all developments comply with the Climate Action Objectives and the Circular Economy and Waste Management Objectives in the Dublin Airport Local Area Plan 2020, or any subsequent LAP or extension of same.

IUP22 – Transition from a Waste Economy Towards a Green Circular Economy

Support the principles of transition from a waste economy towards a green circular economy and implement good waste management and best practices to enable Fingal to become self-sufficient in terms of resource and waste management and to enhance employment and increase the value recovery and recirculation of resources, in accordance with the Whole-of-Government Circular Economy Strategy 2022

IUPO28 – Eastern Midlands Region Waste Management Plan

Implement the provisions of the Eastern Midlands Region Waste Management Plan 2015–2021 or any subsequent Waste Management Plan applicable within the lifetime of the Development Plan. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to the requirements of that Plan.

IUO30 – Hazardous Waste

Adhere to the recommendations of the National Hazardous Waste Management Plan 2014–2020 and any subsequent plan, and to co-operate with the EPA and other agencies in the planning, organisation and supervision of the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects. To continue to promote the use of clean technology and minimisation of hazardous waste production in all development within the County.

Guidelines

EPA (2021) Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects

These guidelines supersede the ‘Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Waste Projects’ which were published by the Government in July 2006.

The replacement guidelines reflect current waste legislation and policy including ‘A Waste Action Plan for a Circular Economy Ireland’s National Waste Policy 2020-2025’ published in September 2020. Since the publication of the 2006 guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and life cycle thinking as follows:

- An increased emphasis on waste prevention, in line with the waste hierarchy, through established principles such as designing out waste and the use of green procurement; and
- The guidelines have also been prepared to promote more circular design and construction principles in line with the EU Circular Economy Action Plan under the EU Green Deal. The circular economy model tries to avoid using unnecessary resources in the first place and keep resources ‘in flow’ by means of effective and smart reuse and recycling strategies reducing the use of virgin materials.

The guidelines provide a practical and informed mechanism to document the prevention and management of C&D wastes and resources from design to construction or demolition of a project. They provide clients, developers, designers, practitioners, contractors, sub-contractors, and competent authorities with a common approach to preparing and determining Resource and Waste Management Plans (RWMP) for the construction and demolition sector in Ireland.

The guidelines address the best practice approach for the following phases of a project:

- Prior to Construction – including the stages of design, planning and procurement in advance of works on site; and
- During Construction – relating to the effective management of resources and wastes during construction or demolition operations.

European Commission (2016) EU Construction & Demolition Waste Management Protocol

This protocol was published by the European Commission in September 2016.

The overall aim of the protocol is to increase confidence in the C&D waste management process and the trust in the quality of C&D recycled materials. This will be achieved by:

- a) Improved waste identification, source separation and collection;
- b) Improved waste logistics;
- c) Improved waste processing;
- d) Quality management; and

e) Appropriate policy and framework conditions.

EPA (2019) Guidance on Soil and Stone By-products in the context of Article 27 of the European Communities (Waste Directive) Regulations 2011

Regulation 27 of the European Communities (Waste Directive) Regulations, 2011, as substituted by Regulation 15 S.I. No. 323 of 2020, states the following:

‘the Agency shall take appropriate measures to ensure that a substance or object, resulting from a production process, the primary aim of which is not the production of that substance or object is considered not to be waste, but to be a by-product if the following conditions are met:

- a) further use of the substance or object is certain.*
- b) the substance or object can be used directly without any further processing other than normal industrial practice.*
- c) the substance or object is produced as an integral part of a production process; and*
- d) further use is lawful in that the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.’*

Decisions made by economic operators under Regulation 27 must be notified to the Environmental Protection Agency. Conditions a) to d) must be satisfied for a Regulation 27 notification to be successful.

The purpose of the guidance is to inform economic operators how to prevent waste soil and stone by classifying it as a by-product in accordance with the legislation and the EPA’s regulatory approach to determinations on soil and stone by-products. This guidance document covers soil and stone only.

It is aimed at local authorities, developers, the construction sector, the waste management sector and consultants.

Its environmental objective is by making certain that excess uncontaminated soil and stone is beneficially used with no overall adverse impacts on the environment or human health, a material producer will ensure that the material is regarded as a by-product rather than a waste.

EPA (2020) By Product - Guidance Note. A guide to by-products and submitting a by-product notification under Article 27 of the European Communities (Waste Directive) Regulations, 2011

This guidance note published in 2020 applies to all other sectors and materials apart from soil and stones. It aims to inform economic operators how to prevent waste by classifying it as a by-product in accordance with the applicable Regulations.

EPA (2020) End of Waste Guidance Part 1 and Part 2

Part 1: describes the context and benefits and introducing the end-of-waste test to potential under Regulation 28.

Part 2: provides guidance for applicants on how to address the requirements of the end-of-waste test under Regulation 28 of the European Communities (Waste Directive) Regulations, 2011.

Appendix C

List of Waste Codes

Relevant Waste EWC (European Waste Codes) Codes and Corresponding Waste Descriptions

| | |
|-----------|---|
| 03 | Wastes from Wood Processing and the Production of Panels and Furniture, Pulp, Paper, and Cardboard |
| 03 02 | Wastes from Wood preservation |
| 03 02 01* | non-halogenated organic wood preservatives |
| 03 02 02* | organochlorinated wood preservatives |
| 03 02 03* | organometallic wood preservatives |
| 03 02 04* | inorganic wood preservatives |
| 03 02 05* | other wood preservatives containing hazardous substances |
| 03 02 99 | wood preservatives not otherwise specified |
| 13 | Oil Wastes and Wastes of Liquid Fuels (except edible oils, and those in chapters 05, 12 and 19) |
| 13 07 | Wastes of Liquid Fuels |
| 13 07 01* | fuel oil and diesel |
| 13 07 02* | petrol |
| 13 07 03* | other fuels (including mixtures) |
| 15 | Waste Packaging; Absorbents, Wiping Cloths, Filter Materials and Protective Clothing not Otherwise Specified |
| 15 01 | Packaging (including separately collected municipal packaging waste) |
| 15 01 01 | paper and cardboard packaging |
| 15 01 02 | plastic packaging |
| 15 01 03 | wooden packaging |
| 15 01 04 | metallic packaging |
| 15 01 05 | composite packaging |
| 15 01 06 | mixed packaging |
| 15 01 07 | glass packaging |
| 15 01 09 | textile packaging |
| 15 01 10* | packaging containing residues of or contaminated by hazardous substances |
| 15 01 11* | metallic packaging containing a hazardous solid porous matrix (for example asbestos), including empty pressure containers |
| 16 | Wastes not otherwise specified in the List |
| 16 02 | Wastes from Electrical and Electronic Equipment |
| 16 02 09* | transformers and capacitors containing PCBs |
| 16 02 10* | discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09 |
| 16 02 11* | discarded equipment containing chlorofluorocarbons, HCFC, HFC |
| 16 02 12* | discarded equipment containing free asbestos |
| 16 02 13* | discarded equipment containing hazardous components, other than those mentioned in 16 02 09 to 16 02 12 |
| 16 02 14 | discarded equipment other than those mentioned in 16 02 09 to 16 02 13 |
| 16 02 15* | hazardous components removed from discarded equipment |
| 16 02 16 | components removed from discarded equipment other than those mentioned in 16 02 15 |

| | |
|-----------|--|
| 16 06 | Batteries and Accumulators |
| 16 06 01* | lead batteries |
| 16 06 02* | Ni-Cd batteries |
| 16 06 03* | mercury-containing batteries |
| 16 06 04 | alkaline batteries (except 16 06 03) |
| 16 06 05 | other batteries and accumulators |
| 16 06 06* | separately collected electrolyte from batteries and accumulators |
| 17 | Construction and Demolition Waste (Including Excavated Soil from Contaminated Sites) |
| 17 01 | Concrete, bricks, tiles and ceramics |
| 17 01 01 | concrete |
| 17 01 02 | bricks |
| 17 01 03 | tiles and ceramics |
| 17 01 06* | mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances |
| 17 01 07 | mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06 |
| 17 02 | Wood, glass and plastic |
| 17 02 01 | wood |
| 17 02 02 | glass |
| 17 02 03 | plastic |
| 17 02 04* | glass, plastic and wood containing or contaminated with hazardous substances |
| 17 03 | Bituminous mixtures, coal tar and tarred products |
| 17 03 01* | bituminous mixtures containing coal tar |
| 17 03 02 | bituminous mixtures other than those mentioned in 17 03 01 |
| 17 03 03* | coal tar and tarred products |
| 17 04 | Metals (including their alloys) |
| 17 04 01 | copper, bronze, brass |
| 17 04 02 | aluminium |
| 17 04 03 | lead |
| 17 04 04 | zinc |
| 17 04 05 | iron and steel |
| 17 04 06 | tin |
| 17 04 07 | mixed metals |
| 17 04 09* | metal waste contaminated with hazardous substances |
| 17 04 10* | cables containing oil, coal tar and other hazardous substances |
| 17 04 11 | cables other than those mentioned in 17 04 10 |
| 17 05 | Soil (including excavated soil from contaminated sites), stones and dredging spoil |
| 17 05 03* | soil and stones containing hazardous substances |
| 17 05 04 | soil and stones other than those mentioned in 17 05 03 |
| 17 05 05* | dredging spoil containing hazardous substances |
| 17 05 06 | dredging spoil other than those mentioned in 17 05 05 |
| 17 05 07* | track ballast containing hazardous substances |
| 17 05 08 | track ballast other than those mentioned in 17 05 07 |
| 17 06 | Insulation materials and asbestos-containing construction materials |
| 17 06 01* | insulation materials containing asbestos |

| | |
|-----------|---|
| 17 06 03* | other insulation materials consisting of or containing hazardous substances |
| 17 06 04 | insulation materials other than those mentioned in 17 06 01 and 17 06 03 |
| 17 06 05* | construction materials containing asbestos |
| 17 08 | Gypsum-based construction material |
| 17 08 01* | gypsum-based construction materials contaminated with hazardous substances |
| 17 08 02 | gypsum-based construction materials other than those mentioned in 17 08 01 |
| 17 09 | Other construction and demolition wastes |
| 17 09 01* | construction and demolition wastes containing mercury |
| 17 09 02* | construction and demolition wastes containing PCB (for example PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors) |
| 17 09 03* | other construction and demolition wastes (including mixed wastes) containing hazardous substances |
| 17 09 04 | mixed construction and demolition waste other than those mentioned in 17 09 01, 17 09 02 and 17 09 03 |

Appendix D

Typical Content – Detailed Construction Resource and Waste Management Plan

The detailed CRWMP and the requirements to be adopted by the contractor will include the following:

- A named Resource Manager (RM) of the CRWMP with responsibility for implementation at construction phase must be identified by the contractor;
- The CRWMP must be included in the site induction training;
- Toolbox talks and all other training on the CRWMP must be provided in line with EPA Guidance Section 5.4;
- There must be appropriate procedures for identifying suitably permitted waste collection operators and waste destination sites implemented – a resource for this task is included in Appendix F of the EPA Guidance;
- Resource efficient supply chains should be implemented as appropriate in line with EPA Guidance Section 5.5;
- There must be appropriate procedures for record keeping and reporting of all off-site export of resources implemented;
- There must be procedures for record keeping and reporting of all on site resource uses – this may include measures such as the use of an on-site a mobile crusher for producing aggregate from suitable residual concrete (subject to the appropriate waste consent) – in line with EPA Guidance Section 5.7;
- There must be appropriate procedures for audits and inspections of resource management practices in line with EPA Guidance Section 5.6;
- There must be appropriate procedures for engagement with the Local authority and other stakeholders in line with EPA Guidance Section 5.8;
- There must be a final report prepared summarising the outcomes of resource management processes adopted and the final inventory and cost for the project in line with EPA Guidance Section 5.8;
- Procedures for audits and inspections of resource management practices;
- There should be appropriate site signage on resource management put in place;
- There should be appropriate resource storage implemented on site (i.e., dedicated skips, hazardous materials storage, stockpile management, etc.). Note there are specific requirements on stockpiling more than 50kg of certain persistent organic pollutants (from a construction perspective these may include some chlorinated hydrocarbon contaminants in ground contamination, EPS/XPS insulation building material containing brominated flame retardant (HBCDD) or polychlorinated biphenyls from removal of electrical equipment) under Article 5 of EU Regulation (EU) 2019/1021; and
- There must be appropriate procedures for handling and export of resources in line with EPA Guidance Section 5.3.

Appendix E

Resource and Waste Inventory Template

| LoW Code | Description | Volume Generated (tonnes) | Prevention (tonnes) (non-waste) | Reused (tonnes) (non-waste) | Recycled (tonnes) (waste) | Recovered ⁶ (tonnes) (waste) | Disposed (tonnes) (waste) | Unit Cost Rate (€/tonne) | Total Cost (€) |
|-----------|---|---------------------------|---------------------------------|-----------------------------|---------------------------|---|---------------------------|--------------------------|----------------|
| 17 01 01 | Concrete | | | | | | | | |
| 17 01 02 | Bricks | | | | | | | | |
| 17 01 03 | Tiles and Ceramics | | | | | | | | |
| 17 02 01 | Wood | | | | | | | | |
| 17 02 02 | Glass | | | | | | | | |
| 17 02 03 | Plastic | | | | | | | | |
| 17 03 02 | Bituminous mixtures | | | | | | | | |
| 17 04 01 | Copper, Bronze, Brass | | | | | | | | |
| 17 04 02 | Aluminium | | | | | | | | |
| 17 04 03 | Lead | | | | | | | | |
| 17 04 04 | Zinc | | | | | | | | |
| 17 04 05 | Iron and Steel | | | | | | | | |
| 17 04 06 | Tin | | | | | | | | |
| 17 04 07 | Mixed Metals | | | | | | | | |
| 17 04 11 | Cables | | | | | | | | |
| 17 05 04 | Soil and Stone | | | | | | | | |
| 17 06 04 | Insulation Material | | | | | | | | |
| 17 08 02 | Gypsum | | | | | | | | |
| 17 09 04 | Mixed C&D Waste | | | | | | | | |
| 17 01 06* | <i>Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing hazardous substances</i> | | | | | | | | |

| LoW Code | Description | Volume Generated (tonnes) | Prevention (tonnes) (non-waste) | Reused (tonnes) (non-waste) | Recycled (tonnes) (waste) | Recovered ⁶ (tonnes) (waste) | Disposed (tonnes) (waste) | Unit Cost Rate (€/tonne) | Total Cost (€) |
|-----------|---|---------------------------|---------------------------------|-----------------------------|---------------------------|---|---------------------------|--------------------------|----------------|
| 17 02 04* | <i>Glass, plastic and wood containing or contaminated with hazardous substances</i> | | | | | | | | |
| 17 03 01* | <i>Bituminous mixtures containing coal tar</i> | | | | | | | | |
| 17 04 09* | <i>Metal waste contaminated with hazardous substances</i> | | | | | | | | |
| 17 05 03* | <i>Soil and stones containing hazardous substances</i> | | | | | | | | |
| 17 06 05* | <i>Construction materials containing asbestos</i> | | | | | | | | |
| | Other resources (non-waste materials) (specify as needed) | | | | | | | | |
| | Other Wastes (specify as needed) | | | | | | | | |