August 2025

Construction Environmental Management Plan

(working document)

Proposed Offshore Renewable Energy ('ORE') Capable Terminal on a 250m Wharf Extension & Ancillary Operational Support Infrastructure

Calafort Phort Láirge
Port of Waterford

On behalf of

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny

MALONE O'REGAN ENVIRONMENTAL

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Construction Environmental Management Plan

Proposed ORE Capable Terminal on a 250m Wharf Extension & Ancillary Operational Support Infrastructure

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny

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1 INTRODUCTION

Malone O'Regan Environmental Services ('MOR Environmental') was commissioned by Port of Waterford Company ('the Applicant') to prepare a working Construction Environmental Management Plan ('CEMP'). This report considers the construction of proposed port facilities comprising of a circa ('ca.') 250-metre ('m') wharf extension to support proposed Offshore Renewable Energy ('ORE') development and general port development, land reclamation, ancillary works and a biodiversity enhancement area ('the Proposed Development').

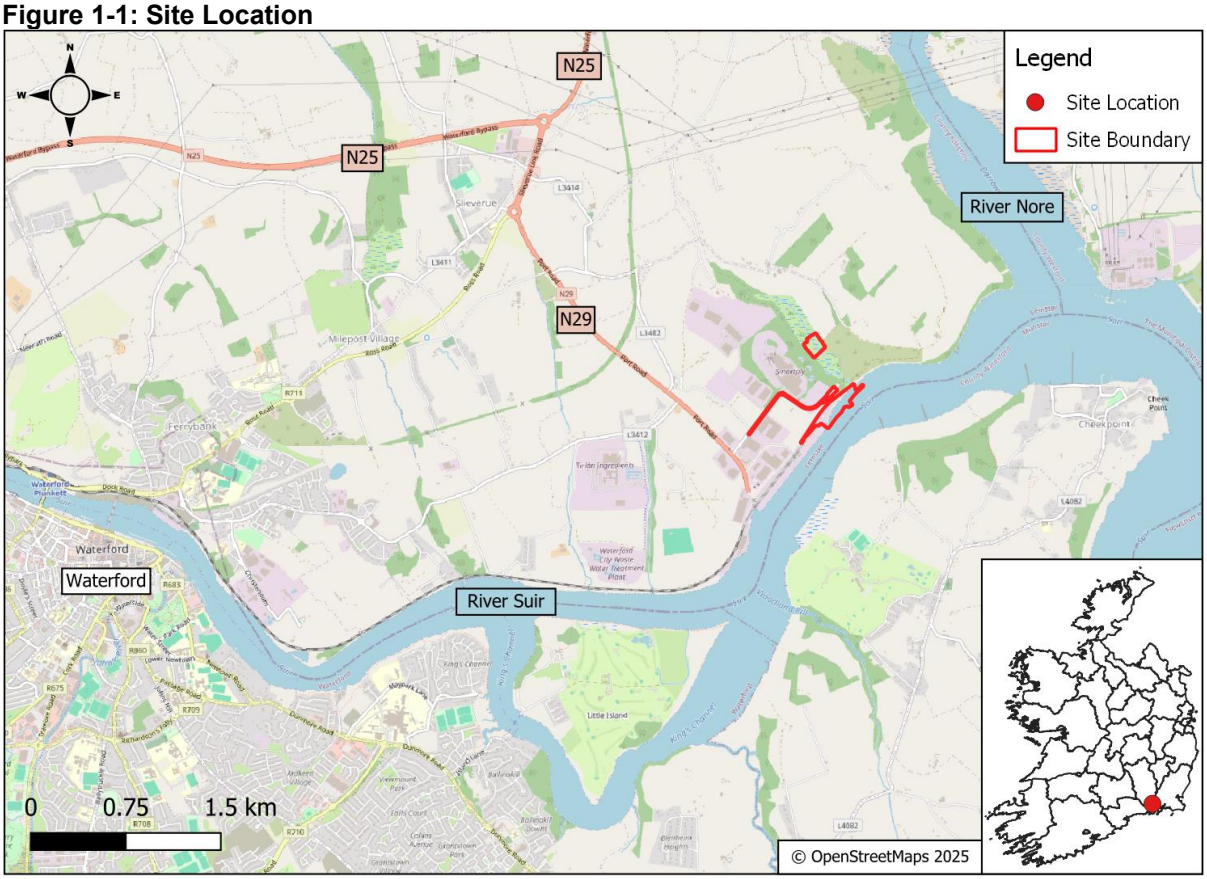
The Proposed Development will be located partly on land and partly in the near-shore area of the coastal planning authority (Kilkenny County Council) at the Port of Waterford, Belview, Co. Kilkenny ('the Site') (ITM OS Reference: 666422; 613637).

The Site has a gross site area of ca. 8 hectares ('ha') and is made up of the following sections:

- ca. 4.9ha of development within the existing Port of Waterford landownership;
- ca. 1.3ha of reclaimed area within the River Suir using reclaimed materials and quarried rock; and,
- ca. 1.8ha of a biodiversity enhancement area located to the northwest of the wharf development.

Figure 1-1 shows the location of the Site, located partly within the townland of Gorteens, Co. Kilkenny, ca. 5.6km northeast of Waterford City.

Figure 1-1: Site Location



1.1 Scope and Objective

The key objective of this CEMP was to ensure that all potential construction phase environmental effects will be addressed in accordance with current legislative requirements and best practice guidelines. It will assist in the control of environmental risks that may arise

during construction to ensure that these works will not result in an environmental incident, environmental damage, or undue nuisance to the local environment.

This document contains an assessment of the likely risks on-site; it outlines procedures for monitoring the effectiveness of the environmental protection measures and disseminating information to all relevant personnel during the construction programme. In assessing the risks to the environment on and adjacent to the Site, cognisance has been taken of:

- CIRIA C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors [1];
- CIRIA C584 – Coastal and Marine Environmental Site Guide for Protection of Water Quality and, in turn, Aquatic Life, During the Construction Phase of the Works [2];
- CIRIA C648 – Control of Water Pollution from Linear Construction Projects: Technical Guidance [3];
- CIRIA C649 – Control of Water Pollution from Linear Construction Projects: Site Guide [4];
- CIRIA C674 – The Use of Concrete in Maritime Engineering – Guide to Good Practice [5];
- CIRIA C811 – Environmental Good Practice on Site (5th edition) [6];
- CIRIA C753 – The SuDS Manual [7];
- CIRIA C744 – Coastal and Marine Environmental Site Guide (Second Edition) [8].
- Inland Fisheries Ireland ('IFI'), 'Requirements for the Protection of Fisheries Habitat during Construction and Development' [9];
- National Road Authority ('NRA'), 'Guidance for the Treatment of Otters Prior to the Construction of National Road Schemes' [10];
- National Roads Authority ('NRA') 'Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes' [11];
- NRA, 'Guidance on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads' [12];
- Department of Arts, Heritage and the Gaeltacht ('DAHG'), 'Guidance to Manage the Risk to Marine Mammal from Man-made Sound Sources in Irish Waters' [13];
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 1 [14];
- Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 2 [15];
- OSPAR - Guidelines for the Management of Dredged Material [16];
- BS 5228-1 + A1:2014: Code of Practice for noise and vibration control on construction and open sites- Part 1: Noise [17] and Part 2 Vibration [18];
- Statutory Instrument ('S.I.'): S.I. No. 299 of 2007: Safety, Health and Welfare at Work (General Application) Regulations, 2007 [19];
- S.I. No. 254 of 2018 as amended by S.I. No. 180 of 2019, HSA Safety, Health and Welfare at Work (Diving) Regulations, 2018-2019 [20] (where required);
- Best Environmental Management Practice in the Building and Construction Sector (European Commission Joint Research Centre ('ECJRC') 2012) [21];

- Whole of Government Circular Economy Strategy (Government of Ireland, 2021) [22];
- National Hazardous Waste Action Plan (NHWP) 2021-2027 (EPA, 2021) [23];
- Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction and Demolition Projects (EPA, 2021) [24];
- Guidelines for the Identification and Proper Management of Hazardous Fractions in Construction and Demolition Waste (EPA, 2024) [25]; and
- Business Conservation Tips – Construction (Uisce Éireann/Irish Water, 2022) [26].

Further guidance regarding the protection of particular species mentioned in the Appropriate Assessment: Stage 2 - Natura Impact Assessment ('NIS') (included in the Planning Application) may also apply during the construction period.

To achieve this objective, the CEMP will:

- Provide a method of documenting compliance with the Environmental Commitments / Environmental Management Requirements / Best Practice Guidelines;
- Ensure compliance with current legislation;
- Effectively minimise any potential adverse environmental effects during construction including how site-specific method statements will be developed to avoid, minimise and mitigate construction effects on the environment; and,
- Communicate key environmental obligations that apply to all contractor organisations, their sub-contractors and employees while carrying out any form of construction activity.

This CEMP will be used by the appointed contractor to prepare an updated and comprehensive site-specific CEMP prior to the commencement of any on-site works. If required by the conditions of the grant of planning permission, the updated plan will be approved by the Planning Authority in advance of any works commencing on-site. The approved plan will be implemented for the duration of the construction works to protect the receiving environment from potential impacts arising during the construction works.

1.2 Report Structure

This CEMP should be considered by the appointed contractor as a 'working' document with reviews being undertaken at predetermined intervals and relevant information added / modified as appropriate. The measures identified in the CEMP should be:

- Viewed as mandatory and common practice on-site; and,
- Embedded within the construction company's policies and site procedures, e.g., within an existing environmental management framework.

2 DESCRIPTION OF THE PROPOSED DEVELOPMENT

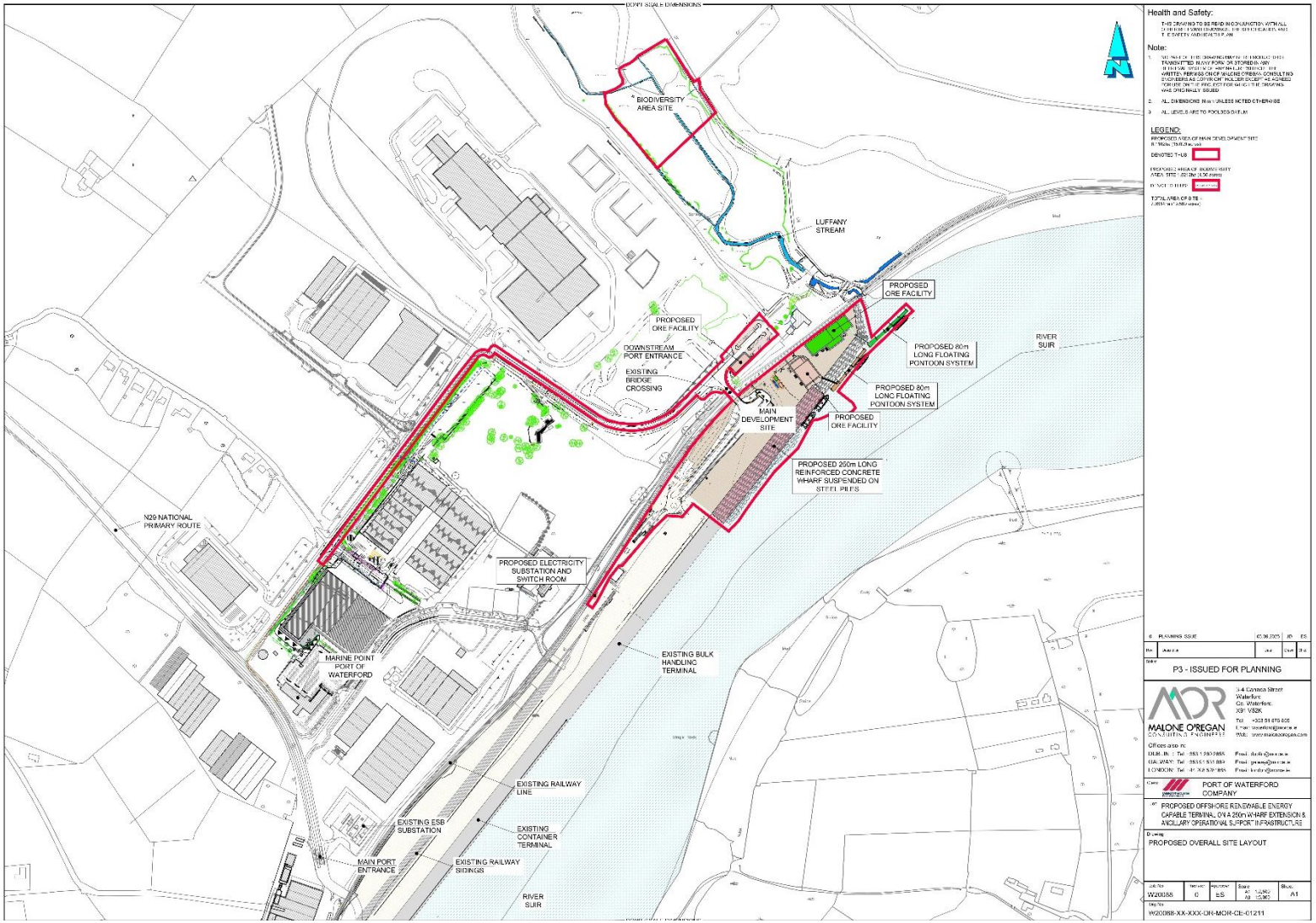
The Proposed Development will comprise a proposed ORE Capable Terminal located on a ca. 250m wharf extension, land reclamation, ancillary works and a biodiversity enhancement area (gross area ca. 8ha), partly on land and partly in the near shore area of the coastal planning authority (Kilkenny County Council) at Port of Waterford, Belview, Co. Kilkenny.

The Proposed Development will comprise:

- A ca. 250m extension to the existing wharves at the container / bulk handling terminal at Belview port, as a continuation of the existing wharves, comprising a reinforced concrete suspended deck supported on reinforced concrete beams and steel piles socketed into bedrock below the Lower River Suir Special Area of Conservation ('SAC') and partly on land with a retaining structure to the rear;
- Land reclamation, covering an area of ca. 1.3ha primarily using imported quarried rock and, if suitable, treated dredged material, retained by the wharf structure and a rock-armoured embankment beneath the wharf and to the downstream end of the development;
- Two separate quayside ORE Operator support facilities (annotated Operator 1 and Operator 2 on drawings) located at the downstream area of the Port, supported on piled foundations, with associated support and warehousing / workshop buildings, berthing pontoons, yard areas and crane installations;
- A three-storey administrative office and staff facilities building for Operator 1 located in the downstream area of the Port and supported on piled foundations, and associated car parking to the east of the railway bridge crossing;
- A three-storey administrative office and staff facilities building for Operator 2 located on the north side of the Rosslare-Limerick railway line and supported on piled foundations, and associated car parking for staff;
- Associated underground services, water supply and drainage to include a pumped rising main to discharge foul water from the development to the Uisce Éireann network
- An Electricity Substation to replace existing Substation;
- Additional lighting and lighting pylons;
- Relocation of existing weighbridges and security cabin;
- Partial demolition of both the existing downstream ramp and the existing dolphin to facilitate the development;
- Minor works to the existing quay to facilitate structural interfacing between existing and proposed structures;
- Roof-mounted solar photovoltaic ('PV') arrays;
- Biodiversity Enhancement Area (ca. 1.8ha) located to the northeast of the wharf extension in existing agricultural wet grassland that is bisected by the Luffany Stream;
- Diversion, extension and relocation of the outfall to the existing drainage pipe serving the SmartPly facility; and,
- All associated Site development works.

A detailed Site layout is presented in Figure 2-1 below.

Figure 2-1: Site Layout



3 CONSTRUCTION WORKS

3.1 Construction Programme

The construction works are currently planned to begin in Q3 2026 and will take ca. 18-24 months to complete.

The construction works will be undertaken in six distinct phases of work, although there will be some overlap between these different phases. The Construction Phases are presented in Table 3-1 below and described below in Sections. 3.1.1 to 3.1.7.

Table 3-1: Indicative Construction Phase Programme

Construction Phase	Estimated Duration (Months)
Site Set-up	0.5 – 1
Demolition Works	1
Capital Dredging & Land Reclamation Works	6 – 9
Construction of Wharf	9 – 12
Building Construction	12 – 15
Works Completion	2 – 3
Estimated Duration of Construction	**18-24 Months**

3.1.1 Site Set-Up

Site enabling works will be undertaken to prepare the port area for expansion while ensuring compliance with environmental protection requirements. This will involve the creation of a temporary construction compound (refer to Section 3.2.1 below). Activities will include establishing secure perimeter fencing, controlled access points, and clear site signage to manage vehicle and pedestrian movement. Temporary welfare facilities will be installed, and existing port facilities will be utilised where feasible. Wheelwash systems will be provided at exit points to prevent debris and sediment from reaching public roads, and internal haul routes will be prepared with appropriate surfacing to reduce dust and sediment runoff into adjacent waters.

Additional preparatory measures will include minor grading or clearance works, the installation of temporary drainage infrastructure such as silt traps to manage surface water, and the provision of bunded storage areas for fuels, oils, and other hazardous materials. Designated waste segregation areas will be established to ensure inert, recyclable, and general waste streams will be managed appropriately. All enabling works will be carried out under strict environmental controls to safeguard local water quality, minimise dust and noise emissions, and limit disruption to port operations and surrounding communities. The estimated duration of this phase will be between ca. two weeks to one month.

3.1.2 Demolition Works

Demolition will comprise the removal of existing port structures to allow the wharf extension to proceed:

- Partial demolition of the downstream ramp (approx. 3,000 m³);
- Partial demolition of the downstream dolphin (concrete deck and access gangway; piles cut at bed level);

- Removal of downstream fendering; and,
- Removal of steel framing at the quay's downstream end.

Suitable arisings will be reused as reclamation fill; other materials will be sent to licensed facilities.

3.1.3 Capital Dredging and Land Reclamation Works

Capital dredging (ca. 7,000 m³) will be undertaken locally at the downstream end of the wharf extension to achieve the design depth of –10 metres Ordnance Datum ('mOD') Poolbeg.

Land reclamation will cover approx. 1.3 ha, requiring about 160,000 tonnes of quarried rock and, where suitable, treated dredged material. The area will be stabilised with a geotextile layer and rock armouring before being brought up to final levels.

3.1.4 Construction of Wharf

The new wharf (ca. 250 m x 23.5 m) will be constructed as a reinforced concrete deck supported on 200–240 steel piles socketed into bedrock. Works will include:

- Installation of piles using marine plant;
- Sequential placement of fill and rock armour;
- Precast beam installation, pile cap casting, and placement of deck slabs;
- Construction of tie rods, anchor walls, and quay furniture (bollards, fenders); and,
- Integration of below-ground services and tanks during fill and deck works.

3.1.5 Building Construction

Building works will proceed once reclamation areas are ready. These will include:

- Piled foundations, pile caps, and ground beams;
- Erection of steel frames and floor slabs;
- Installation of cladding, roofing, and building services;
- Fit-out of ORE operator buildings and administration offices; and,
- Completion of external works including surfacing, fencing, gates, car parks, and landscaping.

3.1.6 Works Completion

Final completion will involve:

- Delivery and installation of pontoons, gangways, cranes, and fuel tanks with bunds;
- Connection of drainage, lighting, power, and communications networks;
- Road surfacing, signage, fencing, and security installations; and,
- Implementation of the biodiversity enhancement area, including wetland features, riparian planting, and artificial habitats.

3.1.7 Ancillary Construction Aspects

In addition to the main wharf, reclamation, and building works, the project will involve the following supporting construction elements:

- **Energy Supply:** Replacement of the existing 750 kVA substation with a new ESB-compliant unit and installation of LV/ELV ducting, pillars, and metering units to distribute supply across the wharf extension;

- **Water Supply:** Extension of the potable water network to serve quayside operator facilities, vessels, and the office north of the railway line;
- **Drainage:** Construction of new surface water networks, settling tanks, bypass interceptors, and emergency holding tanks; extension of the SmartPly outfall; connection of foul drainage to the Uisce Éireann network via pumped rising main;
- **Firefighting Facilities:** Extension of the existing port fire main, installation of new hydrants, hose reels, alarms, and extinguishers in all buildings;
- **Site Access:** Primary access via the existing downstream Port entrance; construction of internal haulage routes and connections to reclaimed areas;
- **Parking:** Development of 76 new car parking spaces split north and south of the railway line, with accessible bays adjacent to operator facilities;
- **Weighbridges:** Relocation of the two existing downstream weighbridges to accommodate the extended quay arrangement;
- **Lighting:** Installation of external lighting for wharf areas, pontoons, car parks, and buildings in accordance with operational requirements; and,
- **Biodiversity Enhancement Area:** Creation of a ca. 1.8 ha ecological enhancement zone, incorporating shallow ponds, riparian woodland planting, an artificial otter holt, and a sand martin bank.

3.1.8 Commissioning

Once the construction works have been completed, the Commissioning Phase will commence. This Commissioning Phase will be required before the Site can become fully operational and connect to various resource networks. It is anticipated that these works will include the following phases:

- Power connections;
- Water connections;
- Telecoms connection;
- Electrical, Lighting and Data Commissioning;
- Mechanical and Fire Water Mechanical Commissioning; and,
- Drainage Commissioning.

3.2 Construction Management Plan

During the Construction Phase, the methods of working will comply with all relevant legislation and best practice in order to reduce the environmental impacts of the works. Although construction phase impacts will generally be of a short-term duration and localised in nature, the impacts will be reduced as far as practicable through compliance with current construction industry guidelines.

The hours of construction work will be:

- Monday – Friday: 07:00 – 19:00; and,
- Saturday: 07:00 – 14:00.

Pile installation works will be limited to 08:00 – 18:00 Monday to Friday, and 8:00 – 14:00 on Saturdays.

As per any construction works programme, there will be the occasional requirement when emergency works will be required outside these hours. At all times the Planning Authority will be notified of works that need to occur outside the agreed hours.

3.2.1 Construction Compound

To ensure the efficient management of the construction works, a temporary Contractor's compound will initially be established on the elevated area in the northern section of the Site, north of the Rosslare-Limerick railway line. As the works progress and reclamation makes further areas available, the Contractor will establish a secondary compound adjacent to the construction works for the wharf in the main Belview Port area.

3.3 Construction Traffic and Site Access

The access to the Proposed Development will be via the existing L7582 industrial access road, which provides vehicular access from the Proposed Development to the existing N29 national road.

All construction traffic will travel via these two roads to gain access to the construction site. The construction compound will provide an area within the site to allow loading and unloading of HGV vehicles if required.

The busiest period of the construction works will occur during the filling works. During this 5-month period, it is estimated that there will be approximately 87 HGVs per day arriving to the site. Based on a 10-hour operating day it is estimated that nine HGVs will arrive / depart the construction site during the AM and PM peak periods. In addition, it is expected that there will be approximately 27 vehicles associated with staff during the filling phase of the construction works.

4 ENVIRONMENTAL MANAGEMENT FRAMEWORK

4.1 Environmental Policy

The Proposed Development will be carried out in accordance with the appointed Contractor's Environmental Policy and procedures.

4.2 Environmental Objectives and Targets

Environmental objectives for the construction phase will be developed and will refer to legal compliance and environmental good practice. These may include:

- Zero pollution incidents;
- Minimise disruption to residents (and their complaints);
- Reduce / avoid impacts on biodiversity; and,
- Minimise waste sent to landfill.

Monitoring the construction processes against the project environmental objectives will be the responsibility of the Appointed Project Manager.

4.3 Structures and Responsibilities

The final CEMP will include a management structure that includes an organisational chart encompassing all staff responsible for environmental work. This will set out the respective roles and responsibilities regarding the environment and identify the nominated Construction Environmental Manager. Illustrative key roles and responsibilities are set out in Table 4-1 below.

Table 4-1: Roles and Responsibilities

Role	Responsibility
Project Manager/ Construction Environment Manger (Appointed Contractor)	Responsible for management of the construction phase of the project. Has overall responsibility for the environmental performance of the project. Responsible for implementing the CEMP during the construction phase to ensure that waste is disposed of legally, economically, and safely. Responsible for reporting incidents and where required, communicating the incident details to the client and relevant regulatory authorities. Ensure compliance with environmental legislation, consents, objectives, targets, and other environmental commitments, including those arising from the NIS report and other reports. Some of the above responsibilities may be assigned to a responsible deputy but overall responsibility will remain with the Project Manager/ Construction Environmental Manager.
Site Staff (Assigned by Appointed Contractor)	To receive general environmental awareness training and undertake work in accordance with Method Statement Briefings and toolbox talks. Trained personnel to manage tasks such as refuelling plant and equipment, managing the stores, water quality monitoring and supervising the segregation and collection of waste.
Environmental Consultant (Assigned by Appointed Contractor)	To provide information relevant to construction that may assist the Contractor to manage environmental aspects of the scheme and to ensure that the Contractor complies with all the relevant legal requirements, commitments and targets agreed for the scheme.
An Ecological Clerk of Works ('ECoW')	To be appointed for the construction works and will be available should protected or notable species be encountered during operations at the Site; and,

Role	Responsibility
(Assigned by Appointed Contractor)	In advance of works, all Site personnel will receive a toolbox talk regarding the ecological mitigation measures outlined in the CEMP, EIAR and NIS.
Waste Manager (Assigned by Appointed Contractor)	To be appointed for the construction works and will be responsible for full details of all movements and treatment of construction and demolition waste discards to be recorded during the construction stage of the Project.

4.4 Communication

The CEMP will be distributed to the project team, including subcontractors, to ensure that the environmental requirements will be communicated effectively. Key activities and environmentally sensitive operations will also be briefed to staff and contractors. Project, client, and company environmental policies, where available, will be displayed on-site.

The Contractor will define procedures for internal and external communication. The Applicant may require that any communication with external parties, such as environmental regulators or the public, will be undertaken through a nominated client representative.

During the Construction Phase, internal communication will include regular progress meetings, which will cover:

- Training undertaken;
- Progress reports;
- Inspections, audits, and non-conformance;
- Complaints received;
- Visits by external bodies and the outcome or feedback from such visits;
- Objective / target achievement, including reporting on environmental performance; and,
- External communication, including letter drops or meetings, and liaison with statutory authorities will be overseen by the Client Project Manager.

5 ENVIRONMENTAL RISK ASSESSMENT

The classification of the environmental risks arising from the Construction Phase is adapted from the definitions of significance as outlined by the EPA for Environmental Impact Assessments [27] as shown below in Table 5-1.

Table 5-1: Rating Magnitude of Impact

Magnitude of Impact	**Importance / Sensitivity of Resource**			
	High	**Moderate**	**Low**	**Negligible**
Large	Profound	Significant	Moderate	Slight
Medium	Significant	Significant	Moderate	Slight
Small	Moderate	Moderate	Slight	Slight
Negligible	Slight	Slight	Slight	Imperceptible

In addition to assessing risk arising from known sources, an assessment of risk for an unplanned event/incident on-site was also assessed. These were rated as per the EPA's 'Guidance on Assessing and Costing Environmental Liabilities', [28]. The methodology for the rating of likelihood and consequence are shown in Table 5-2 and Table 5-3.

Table 5-2: Rating of Likelihood of Risk Occurring

Rating	**Likelihood**	
	Category	**Description**
1	Trivial	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring.
3	Medium	Medium chance of hazard occurring.
4	High	High chance of hazard occurring
5	Very High	Very high chance of hazard occurring.

Likelihood of occurrence refers to the likelihood of the pollution/nuisance reaching the sensitive receptor after the mitigation measures have been implemented.

Table 5-3: Rating of Consequence of Risk Occurring

Rating	**Consequence**	
	Category	**Description**
1	Imperceptible	An effect capable of measurement but without noticeable consequence; no impact on the environment.
2	Not Significant	No noticeable effect on the environment; no significant consequence.
3	Slight	Noticeable but minor effect, local in extent, not materially affecting the environment.
4	Moderate	A measurable effect that is material at a local scale; may require mitigation.

Rating	Consequence	
	Category	**Description**
5	Significant	An important effect, noticeable at a wider scale, requiring mitigation/management.
6	Very Significant	An effect with serious environmental consequences at a regional or national scale.
7	Profound	An effect of great magnitude, permanent or irreversible, with severe environmental consequences.

5.1 Risk Identification

In developing this CEMP, the following factors have been identified as particularly relevant to the Construction Phase:

- The location of the Site in relation to the surrounding area;
- The local road network and associated access requirements;
- The presence of nearby residences and businesses;
- The Site's position in relation to on-site surface water features and the nearest water bodies;
- The potential for increased air and noise emissions during construction; and,
- The biodiversity value of the Site and its adjacent habitats.

Table 5-4 sets out the specific environmental risks associated with these factors, together with the methodologies proposed to manage and control them, and the site-specific considerations that limit or influence the likelihood of occurrence.

It is acknowledged that certain mitigation measures are referenced under multiple aspects of construction. This reflects the fact that individual environmental receptors, including surface waters, biodiversity, and local communities, may be susceptible to impacts arising from a range of construction activities. In order to ensure robust environmental protection and consistency in site management, common mitigation measures are therefore applied across different risk categories where relevant.

In addition, the appointed Principal Contractor will prepare and implement a Construction Stage Method Statement and a GHG Emissions Reduction Plan, both of which will be incorporated into and form part of the Final CEMP to be adhered to throughout the works and embedded in site operations.

Table 5-4: Site Specific Environmental Risk Assessment and Management

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
Site Operations	Potential nuisance towards public (out of hour's activities)	Slight	Low	Normal construction hours will be restricted to 07:00 to 19:00 Monday to Friday and 07:00 to 14:00 on Saturdays. Site will be secured with security fencing.
Earthworks, Stockpiling & Drainage Installation	Run-off carrying suspended solids into surface water features and the Lower River Suir SAC.	Moderate	Medium	• Standard measures to control run-off will be incorporated to the Method Statements, to include Construction Industry Research and Information Association ('CIRIA') 2001 C532 – Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors and CIRIA 2015 C741 Environmental Good Practice on Site (5th edition); • 20m exclusion zones will be established around drains/watercourses to provide buffer protection; • All stockpile will be maintained at a minimum distance of 20m from the Lower Suir Estuary; • Stockpiles will be set back from drainage features and protected with silt fences or geotextile covers to stop sediment migration; • Temporary berms will be constructed around stockpiles to prevent run-off during rain events; • Stockpiles will be dampened down during dry periods to prevent wind dispersion; • The stockpiles will be clearly segregated, one for reuse in berms, one for reuse in soil stabilisation and another segregated for off-site disposal; • Excavations will only be left open for the minimum time needed to avoid acting as conduits for runoff; • Weather conditions will be considered when programming works, avoiding high-risk activities during heavy rainfall; • Wheel wash facilities will be provided at site exits, and haul roads will be swept/cleaned regularly to reduce mud tracking; • The ECoW will conduct routine inspections; and, • Water quality within the Lower Suir Estuary (suspended solids, or a suitable proxy for turbidity, and pH) will be monitored to verify effectiveness.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
	Encountering contaminated materials during excavation works	Moderate	Low	• Material analytical testing will be conducted as necessary to verify suitability prior to use on-site.
Land Reclamation and Dredging	Sediment plumes/turbidity and accidental release of unsuitable fill material into the estuary	Moderate	Low	• The imported engineering fill will be processed on-site at the source quarry, where it will be crushed and graded to achieve uniform size and washed to remove fine particles that could otherwise contribute to increased turbidity or sediment dispersion during placement; • Analytical testing will also be conducted to confirm that the engineering fill materials will not introduce harmful elements; • Engineering fill materials will be unloaded using controlled methods to avoid accidental spillage into the marine environment; • Placement of the engineering fill materials will occur gradually, with continuous up- and downstream monitoring of water quality parameters, such as suspended solids (or a turbidity as its proxy) and pH, to ensure compliance with environmental thresholds; • Adaptive Management of these reclamation works will be implemented. This approach will be based on modelling-monitoring-adaptation. In practice this means that if any environmental thresholds are significantly exceeded, additional mitigation measures will be considered.
Fuel Storage & Refuelling Operations	Hydrocarbon spill or leak contaminating surface water or drainage networks	Low / Moderate	Low	• All plant and machinery will be serviced before being mobilised to the Site; • All plant, machinery and construction vehicles will be inspected regularly for oil leaks, in accordance with the measures listed in the final CEMP prepared by the Contractor; • All oil stored on-site for construction vehicles will be kept in a locked and bund protected area; • Preventative maintenance and relevant maintenance logs will be kept for all on-site plant and equipment; • Drip trays will be used for fixed or mobile plant such as, pumps and generators in order to retain oil leaks and spills; • Refuelling of plant and machinery will be completed in a controlled manner using drip trays (bunded container trays). Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile containers. Bunds for the storage of hydrocarbons and

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				chemicals will have a holding capacity of 110% of the volume to be stored. In addition, an emergency spill kit with oil boom, absorbers, etc., will be kept onsite in close proximity to any fuel storage tanks or bowsers for use in the event of an accidental spill; • Fuel and oil stores, including tanks and drums, will be regularly inspected for leaks and signs of damage; • All deliveries to onsite oil storage tanks will be supervised. Records will be kept of delivery dates and volumes; • Only designated trained operators will be authorised to refuel plant on-site; • The Site manager shall ensure that all personnel working on-site are trained and aware of the mitigation measures detailed within the EIAR; • Procedures and contingency plans will be set up to deal with emergency accidents or spills; • A procedure will be drawn up, which will be adhered to during the refuelling of on-site vehicles. This will include the following: o Fuel will be delivered to plant on-site by a dedicated tanker or in a delivery bowser dedicated to that purpose; o In the case of a bowser, the driver or supervising foreman will check the delivery bowser daily for leakage; o The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur; o Where the nozzle of a fuel pump cannot be placed fully into the tank of a machine then a funnel will be used; and, o Each area of work will have a designated fuelling area. Section foremen shall identify these areas to their plant operatives; • All equipment associated with the storage of fuel on-site will be designed and installed to relevant standards; • All valves will be of steel construction and the open and close positions will be clearly marked;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• Items of plant unsuitable for travelling to the refuelling area (dry screening plant) will be refuelled utilising adequately sized and positioned drip trays; • Spill kits will be available adjacent to all refuelling and fuel storage operations; • Spill kits will be available on the barge during the piling works – if applicable; • Fuel, chemical and oil storage areas on site will be bunded in compliance with EPA guidance (2004); • Fuels, lubricants and hydraulic fluids for equipment used on the site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best practice codes; • Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or recycling; • Any spillage of fuels, lubricants, hydraulic oils, explosives or other chemicals will be contained as soon as practicable; and, • The proposed design incorporates multiple protective measures, including overfill protection on tanks, full bunding of storage areas, a forecourt interceptor, continuous monitoring, and provision of an emergency holding tank.
Concrete Pouring	Cement washout, grout loss or accidental release of alkaline material to waterbodies.	Moderate	Low	• All concrete pours will be planned with risk assessment to avoid any impacts; • Full washing out of trucks and other equipment will occur at the dedicated contained area; • Water supply points, if required, will be agreed with the appointed Contractor in advance of the works; • Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed; • Chemicals used will be biodegradable where possible;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• Any spillages will be cleaned up immediately and disposed of as per the Waste Management Act. • Where concrete will be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening; and, • Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete.
Waste Management	Incorrect management of municipal, C&D and other wastes / welfare facilities resulting in litter on-site and / or attraction of rodents.	Slight	Medium	• Designated waste areas with appropriate bins and skips will be in place at multiple locations; • Waste Management will be part of site induction for all workers; • Environmental and/or Waste Managers will promptly organise a clean-up of any general waste or litter that may occur; • The re-use of existing rock armour; • Demolition planned to maximise re-use of materials within the Proposed Development; • Clean, inert demolition materials unsuitable for re-use sent to authorised facilities for recovery/recycling; • Rock and aggregates sourced from local quarries where practicable; • Procurement audited to prevent over-ordering; • Materials ordered on an “as needed” and just-in-time basis; • Encouragement of careful working to reduce mis-cuts; • Supply chain systems established to allow return of packaging, surplus materials and off-cuts; • Segregation of all C&D waste streams to maximise recovery/reuse/recycling; • All waste will be managed in compliance with relevant legislation, removed only by licensed carriers, and correctly documented; and, • Any hazardous waste arising will be segregated, contained, classified, transported and disposed of by appropriately permitted handlers in full compliance with legislation.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
	Welfare – Toilet waste.	Slight	Trivial	• Temporary welfare facilities will be available at the Construction Compound.
Nuisance – Dust / Dirt	Generation of dust / dirt causing loss of amenity at residential area or community areas.	Slight	Medium	A Dust Management Plan (DMP) will be prepared and implemented throughout construction. Mitigation measures will include: • Provision and maintenance of a wheel wash at the site exit, with all vehicles required to use it before entering the public road network; • Temporary barriers/windbreak fencing and damping down of exposed soils and stockpiles during dry/windy conditions; • Covering or enclosing dusty materials and ensuring aggregates/cement will be stored in sealed or bunded areas; • Bulk cement or other dried powder material will be delivered in enclosed trucks; • For smaller supplies of fine power materials, the bags will be sealed after use and stored appropriately to prevent dust; • Scabbing (Roughening of concrete surfaces) will be avoided where possible; • Use of water suppression during cutting, grinding or bulk handling; • Minimisation of drop heights for bulk materials; • No burning of waste onsite; • Regular sweeping of haul roads, site accesses and adjacent public roads using water-assisted methods; • Locating dust-generating activities away from sensitive receptors where practicable; • Traffic managed to avoid congestion; • All engines switched off when stationary (no-idling policy); and, • All incidents and complaints will be recorded and acted upon promptly, with increased inspections and controls implemented during periods of high risk.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
Nuisance – Terrestrial Noise	Generation of noise from plant, impact piling, HGVs and material handling causing temporary loss of amenity at nearby receptors (residences, businesses) and potential disturbance to local species.	Medium	Medium	• Construction activities will be limited to 07:00–19:00 (Monday–Friday) and 07:00–14:00 (Saturday) to reduce noise disturbance outside core working hours; • Plant and HGVs will be switched off when not in use, and material handling will be managed to minimise drop heights; • All major compressors will be fitted with acoustic covers, and percussive tools will be equipped with appropriate mufflers or silencers; • Machinery used intermittently will be shut down between tasks to avoid unnecessary noise emissions; • Ancillary plant such as generators, compressors, and pumps will be positioned behind barriers and oriented away from noise-sensitive receptors; • Hoarding and enclosures will be installed around noisy plant where practicable to provide additional screening; • Audible alarms will be set at the lowest compliant level to reduce unnecessary disturbance; • Boundary embankments will be developed early in the works to provide acoustic screening for nearby receptors; • A project liaison officer will be appointed to maintain communication with local residents and businesses regarding noisy activities and their duration; • Ongoing noise monitoring will be undertaken, and a clear response procedure will be in place to address any complaints; and, • Toolbox talks will be provided to ensure all site staff are aware of noise control measures and their responsibilities.
Nuisance – Underwater Noise	Impact piling and related marine works generating underwater noise and vibration, potentially disturbing marine mammals and fish within the River Suir SAC.	Medium	Medium	• Pile driving will be carried out as efficiently as possible and restricted to 08:00–18:00 (Monday–Friday) and 08:00–14:00 (Saturdays); • Soft-start piling, using low-energy strikes gradually ramping up to full power, will be employed at the start of works and after breaks of 30 minutes or more to allow species to vacate the area;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• All piling works will comply with DAHG (2014) Guidance, including the deployment of Marine Mammal Observers (MMOs) and enforcement of exclusion zones; • Works will be paused immediately if protected species are observed within the exclusion zone; and, • Diving operations will be supported with warning notices at access points and local information sessions to inform stakeholders of the areas of concern.
Green House Gases (GHG)	Carbon emissions to the environment.	Slight	Medium	The appointed construction contractor will prepare a GHG Emissions Reduction Plan. Mitigation measures will include, but not be limited to: • Sourcing materials locally where possible to reduce transport emissions; • Re-use of clean, non-hazardous demolition material following testing; • Provision of worker transport services where practicable; • Switching off idling plant and machinery to reduce unnecessary fuel use; • Reuse or recycling of surplus materials generated during construction; and, • Use of low-energy lighting where continuous illumination is required.
Archaeology & Cultural Heritage	Disturbance or loss of archaeological material during dredging or ground works	Moderate	Low	• Archaeological monitoring of all riverbed works to be carried out under licence from the DHLGH, with provision to record and resolve any material identified at the time of discovery; • Licensed archaeologist to be present/available during intrusive works and provided with method statements, drawings, and works schedule in advance; • All works to cease immediately in the event of archaeological material being uncovered, pending inspection and direction from the archaeologist; • Installation of a terram membrane along the historic quay wall to act as a separation barrier between the existing fabric and introduced fill/overburden; • Conservation-led inputs to be incorporated as required to safeguard the historic quay; and,

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• Significant finds to be fully recorded, with any additional measures agreed in consultation with statutory authorities.
Invasive Species	Spread of Invasive Alien Species	Moderate	Medium	• All vehicles, machinery and any other equipment used for the works will be washed prior to its use at the Site to prevent the import of plant material or seeds; • Before machinery or equipment is unloaded at the Site, equipment will be visually inspected to ensure that all adherent material and debris has been removed; • Any vehicles and machinery that are not clean will not be permitted entry to the Site; • All materials to be imported to the Site including additional planting will be sourced from a reputable supplier and records of all material and supplies will be maintained; • In advance of works, all Site personnel will receive a toolbox talk with regards to invasive species; • Everybody working onsite must understand the role and authority of the ECoW managing the issue of the non-native species; • All plant and equipment employed on the construction site (e.g. barges, piling equipment, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival onsite to prevent the spread of invasive plant species; • All washing must be undertaken in areas with no potential to result in the spread of invasive species; • Where risk assessments indicate potential presence of priority IAS (e.g., Asian clam, winter heliotrope), species-specific best practice guidelines developed under EPA Research Report 368 will be applied; • An early-detection and rapid-response framework will be established, including routine inspections at vessel wash-down areas, staff training in IAS identification, and contingency plans for rapid eradication and post-eradication monitoring; and,

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• Biosecurity signage will be displayed at the Site, all personnel will receive induction on invasive species protocols, and suspected sightings will be recorded and reported to the ECoW.
Biodiversity Protection	Impacts on specific flora and fauna	Slight	Low	• All activities will comply with all relevant legislation and best practice to reduce any potential environmental impacts. The mitigation measures detailed within this EIAR and the NIS will be fully adhered to; • The Site manager shall ensure that all personnel working onsite will be trained and made aware of the mitigation measures detailed within this EIAR and the NIS; • An Ecological Clerk of Works ('ECoW') will be appointed for the construction works and will be available should protected or notable species be encountered during operations at the Site; • If protected or notable species are encountered during the operations at the Site, the ECoW will be contacted for advice; • Protected and notable species posters will be erected on the Site notice board and maintained throughout the duration of the works; and, • In advance of works, all Site personnel will receive a toolbox talk regarding the mitigation measures outlined in the CEMP, EIAR and NIS.
	Impacts on water quality	Moderate	Low	• Mitigation measures to follow those outlined above, including controls on sediment, spills, and washout.
	Impacts on Treelines/Woodland	Slight	Low	• Trees close to construction areas will be fenced off for the duration of the works to prevent disturbance from vehicles and to define construction limits; • A buffer zone of 5 m of unexcavated ground will be maintained along the trees to protect root systems; • Where works occur near the buffer zone, roots smaller than 35 mm in diameter will be pruned cleanly with appropriate tools; roots larger than this will only be cut following consultation with an arboricultural specialist; • No materials, machinery, or equipment will be stored within root protection areas (RPAs) or buffer zones; all storage will be sited as far as possible from trees;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• Site operations will be planned to ensure tall or wide loads, and plant with booms or counterweights, can operate without contacting trees; • Notice boards, wires, or other fixtures will not be attached to trees; • Site offices, material storage, and contractor parking will be located outside RPAs; and • All personnel involved in machinery operation will be briefed on tree and hedge protection measures to ensure compliance.
	Impacts on breeding birds, waterbirds and wildfowl	Moderate	Medium	• Any vegetation clearance required within the Site will take place outside of the nesting bird season (1st March to 31st August). Vegetation clearance is restricted as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000; • In the event that rooftop removal or vegetation clearance works need to be undertaken within the main breeding season, the following measures will be implemented: ○ Prior to the works commencing, consultation with the NPWS will be undertaken by the ECoW; ○ Prior to the vegetation removal the ECoW will inspect the Site; and, ○ All vegetation clearance works will be undertaken in a systematic way under the direction of the ECoW. • In the unlikely event that birds nest within the active working area during the works, all works will stop within the immediate area and the project ECoW will be consulted.
	Impact on otter	Slight-Moderate	Medium	• Pre-commencement otter survey will take place along the accessible areas of the shoreline to ensure no otter holts are located within 150m of the Site; • Prior to the commencement of construction, consultation will be undertaken with the NPWS in relation to a derogation licence for the construction works; and, • Noise mitigation measures detailed above in “Nuisance Noise” sections and below in “impacts on aquatic species”.
	Impacts on terrestrial mammals	Slight	Low	• Noise mitigation measures detailed above in “Nuisance Noise” sections.

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
	Impacts on aquatic animals	Moderate	Medium	• During the capital dredging works, the Contractor will implement clear 'soft-start' or 'ramp up' procedures, whereby sound energy input to the marine environment will be gradually or incrementally increased from levels unlikely to cause significant behavioural impact on marine mammals, fish or otter to the full output necessary for completion of the activities. • During the piling works, a suitably qualified marine mammal observer ('MMO') will be appointed to monitor marine mammals and otter. All relevant events will be logged using standardised data forms prepared by the DAHG. • The MMO will assess an area of 1km radial distance of the pile driving sound source as the 'Monitored Zone'. • Pre-Start Monitoring: o Pile driving activities will only commence in daylight hours where effective visual monitoring, as performed and determined by the MMO, will be achieved. Where effective visual monitoring, as determined by the MMO, will not be possible, the pile driving will be postponed until effective visual monitoring will be possible; o An agreed and clear onsite communication signal will be used between the MMO and the Works Superintendent as to whether the relevant activity may or may not proceed, or resume following a break (more information below). Works will only proceed on positive confirmation with the MMO; o Pile driving activity will not commence if marine mammals are detected within the Monitored Zone during the pre-start monitoring; o The MMO will conduct Pre-Start-Up Monitoring, which will be a constant effort monitoring at least 30 minutes before the sound-producing activities are due to commence. Pile driving shall not commence until at least 30 minutes have elapsed with no marine mammals detected within the Monitored Zone by the MMO; and, o The Pre-Start Monitoring will subsequently be followed by an appropriate Ramp-Up Procedure, which will include continued monitoring by the MMO. • Ramp-Up Procedure ('soft-start'):

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				○ In commencing a pile driving operation where the output peak sound pressure level (in water) from any source, including equipment testing, exceeds 170 dB re: 1µPa @1m an appropriate Ramp-up Procedure (i.e., "soft-start") will be used. The procedure for use will be informed by the risk assessment undertaken, giving due consideration to the pile specification, the driving mechanism, the receiving substrate, the duration of the activity, the receiving environment and species therein, and other information; ○ Where it is possible, according to the operational parameters of the equipment and materials concerned, the underwater acoustic energy output will commence from a lower energy start-up (i.e., a peak sound pressure level not exceeding 170 dB re: 1µPa @1m) and thereafter will be allowed to gradually build up to the necessary maximum output over a period of 20-40 minutes; ○ This controlled build-up of acoustic energy output will occur in consistent stages to provide a steady and gradual increase over the ramp-up period; ○ Where the above measures will not be possible, alternatives will be examined whereby the underwater output of acoustic energy will be introduced in a consistent, sequential and gradual manner over a period of 20-40 minutes prior to commencement of the full necessary output; and, ○ In all cases where a Ramp-Up Procedure will be employed, the delay between the end of ramp-up and the necessary full output will be minimised to prevent unnecessary high-level sound introduction into the environment. • Once an appropriate and effective Ramp-Up Procedure commences, there will be no requirement to halt or discontinue the procedure if weather or visibility conditions deteriorate, nor if marine mammals occur within the Monitored Zone; and, • If there is a break in pile driving sound output for a period greater than 30 minutes (e.g., due to equipment failure, shut-down or location change) then all Pre-Start Monitoring and a subsequent Ramp-up Procedure (where appropriate following Pre-Start Monitoring) will be undertaken.
	Impacts on nocturnal animals	Slight	Medium	• Avoidance of excessive lighting;

Aspect of Construction	Potential Hazard	Magnitude	Likelihood	Risk Management Procedure
				• Lighting will be aimed only where it is needed; • Lighting will be turned down / off when not required; and, • Accessories such as baffles, hoods or louvres will be used to reduce light spill and direct light only where it is needed.

6 EMERGENCY MANAGEMENT PLAN

Although the Site will be managed, there remains a minimal risk from the unexpected occurrences, such as accidental spillages on-site that may result in environmental pollution. Incidents on-site will follow a similar emergency response template. This template is outlined in the schematic presented in Figure 6-1.

Table 6-1: Emergency Response Template

6.1 Incident Response

Where an environmental incident is identified, it will be reported to the appointed Environmental Consultant or on-duty Site Foreman and thereafter, the Employer's Representative. Each incident will have the following information gathered and reported:

- Location of the incident;
- Time and date;
- Scale of the incident;
- Nature of the incident, including any specific environmental dangers;
- Remediation actions taken;
- Name of personnel noting the incident, and who they work for; and,
- Any other relevant details.

Works in the vicinity of the incident must be stopped until the incident is resolved and an all-clear is issued by the Project Supervisor (Construction Stage) or the Applicant's on-duty Environmental Manager. All personnel in the immediate area of the incident shall be alerted to the circumstances and any dangers to them (Health and Safety) and to the environment.

The Project Supervisor (Construction Stage) and the Applicant's on-duty Environmental Manager will ensure, where required, that the incident details are communicated to the relevant regulatory authorities.

7 WASTE MANAGEMENT PLAN

7.1 Assignment of Responsibilities

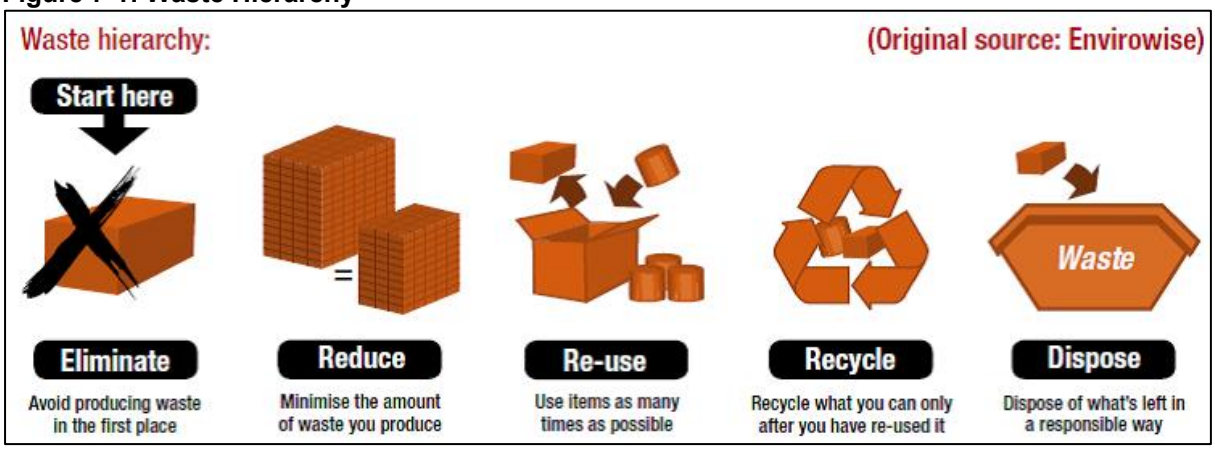
The Project Manager appointed by the Contractor will be the designated Construction & Demolition ('C&D') Waste Manager and have overall responsibility for the implementation of the Project C&D Waste Management Plan. The C&D Waste Manager will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan. At the operational level, the Project Manager from each sub-contractor on the Site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Project C&D Waste Management Plan are performed on an ongoing basis.

7.2 Minimisation, Re-use and Recycling of Waste

All waste generated during the course of the project will be managed in accordance with the governing Waste Management Legislation and the principles of the Waste Hierarchy, i.e., prevention, minimisation, re-use, recovery and recycling. Refer to Figure 7-1 for details regarding the Waste Hierarchy.

This CEMP has been prepared taking cognisance of the "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" [29] and taking cognisance of "Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects." [30].

Figure 7-1: Waste Hierarchy



It is expected that while there will be unavoidable construction waste, including material surpluses and damaged materials that will need to be disposed of, the Site Manager shall ensure that materials are ordered such that the quantity delivered, and the storage of those materials is not conducive to the creation of unnecessary waste.

To summarize, this approach applies to all construction activities associated with the wharf extension, dredging, reclamation, and associated onshore works. It covers:

- Demolition waste from removal of existing structures (ramp, fendering, mooring dolphin, steel beams);
- Dredged materials arising from capital dredging works;
- C&D waste, including concrete, stone, steel, timber, packaging, and insulation;
- Hazardous waste, including oils, paints, adhesives, contaminated soils (if any), and used spill kit materials; and,
- Municipal waste generated from site welfare and canteen facilities.

Table 7-1: Waste Management Principles & Actions

Waste Management Principles	Actions to be undertaken
Prevention and Minimisation	• Design and procurement will minimise excess ordering and packaging; • Materials will be ordered on an "as needed" and just-in-time basis to reduce spoilage; and, • Demolition will be planned to maximise reuse of recovered materials (e.g., reuse of concrete from the existing ramp and dredged material suitable for backfilling).
Segregation and Storage	• Waste streams will be segregated at source into designated containers/skips (e.g., metals, timber, concrete, soils, packaging, hazardous waste); • Secure, bunded storage will be provided for hazardous wastes (oils, solvents, contaminated absorbents); and, • All waste containers will be clearly labelled and maintained in a designated compound away from surface water drains.
Reuse and Recycling	• Clean inert material will be reused on-site where feasible (e.g., suitable dredged spoil and recovered rock armour); • Concrete, brick, and stone unsuitable for on-site reuse will be sent to authorised recovery facilities; and, • Metals, timber, and packaging will be segregated and sent to authorised recyclers.
Recovery and Disposal	• Residual waste unsuitable for recycling will be sent to authorised recovery or disposal facilities; and, • Hazardous wastes will be collected, transported, and treated by licensed waste contractors in accordance with Irish and EU legislation.
Compliance and Documentation	• Only permitted waste carriers and facilities will be used; • Waste transfer notes and records will be maintained for all consignments, including volumes, waste codes ('EWC'), transporters, and destinations; and, • Records will be made available for inspection by the regulators, and the Port of Waterford's Environmental Manager.

7.2.1 Soil and Aggregates

Excavation and reclamation activities during the Construction Phase will generate significant volumes of material. Approximately 3,000 m³ of material (concrete and soil) will be recovered from demolition of the existing access ramp, of which a large proportion will be reused as infill within the reclamation area. In addition, ca. 7,000 m³ of material will be dredged from the riverbed at the downstream end of the wharf extension to achieve the design berth depth. Suitable dredged spoil will be reused within the reclamation works, with only unsuitable or contaminated material sent off-site to an authorised recovery or disposal facility.

The reuse of excavated soils and dredged material within the Site will reduce the requirement for imported fill and significantly minimise the volume of material requiring off-site transport. This strategy will also limit heavy goods vehicle ('HGV') movements to and from the Site, thereby reducing potential impacts on the local road network, air quality and noise environment.

7.3 Training

Copies of the CEMP will be made available to all relevant personnel at the Site and included as part of the site induction information. All site personnel and sub-contractors will be instructed about the objectives of the CEMP and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation and material re-use techniques apply, each member of staff will be given instructions on how to comply with the CEMP.

7.4 Waste Auditing

The main contractor will manage the development and implementation of the Construction Environmental & Waste Management Plan and monitoring/mitigation measures. The C&D Waste Manager shall arrange for full details of all movements and treatment of construction and demolition waste discards to be recorded during the construction stage of the Project. Each consignment of C&D waste taken from the Site will be subject to documentation, which will conform with the requirements of Table 7-2 and ensure full traceability of the material to its final destination.

Table 7-2: C&D Waste to be Included in Dockets

Details	Particulars
Name of the project origin	Insert Address
Material being transported	Identify the material being transported, e.g., soil and stone, timber.
Quantity of material	Record the quantity in tonnes (use three-place decimals)
Date of material movement	Record the date
Name of permitted carrier	Record the driver's name, vehicle registration and permit number.
Material Destination	Record Site address and permit number if applicable
Proposed Use	Record the proposed use, recovery or disposal.

Details of the inputs of materials to the construction site and the outputs of wastage arising from the Project will be investigated and recorded in a Waste Audit, which will identify the amount, nature and composition of the waste generated on the Site. The Waste Audit will examine the way the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste.

The measured waste quantities will be used to quantify the costs of management and disposal in the Waste Audit Report, which will also record lessons learned from these experiences which can be applied to future projects. The total cost of C&D waste management will be measured and will take into account the purchase cost of materials, handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be calculated for the management of a range of C&D waste materials using the format shown in Table 7-3 below.

Table 7-3: Example Record form for Costs of C&D Waste Management

Material	Estimated Quantities	Units	Associated costs
Quantity of waste material			
Purchase Costs i.e., Import Costs			
Material Handling Costs			
Material Storage Costs			
Material Transportation Costs			
Revenue from Material Sales			
Material Disposal Costs			
Material Treatment Costs			
Total Waste MATERIAL Management Costs			
Unit Waste MATERIAL Management Cost			

A separate table will be compiled with respect to each waste material, replacing "MATERIAL" with the relevant item. Final details of the quantities and types of C&D Waste arising from the Project will be forwarded to the Council's Environmental Department.

7.5 Hazardous Wastes

It is not anticipated that there will be significant quantity of hazardous wastes generated on-site. Nonetheless, the management of hazardous waste will comply with all relevant current legislation:

- The Waste Management Acts ('WMA') 1996 (as amended); and,
- Waste Management Regulations 1998 (as amended).

Hazardous waste which may be produced or encountered at the Site includes:

- Soils contaminated with waste oils or fuels;
- Waste oils and fuels;
- Used aerosol containers; and,
- Paints, lubricants, foams and similar materials

Hazardous wastes will be kept separate from other C&D waste materials to avoid further cross-contamination. Hazardous wastes will be stored at the Site a dedicated labelled area in suitable labelled receptacles for subsequent separation and disposal at a suitably permitted / licenced remote facility. Appropriate containment will be provided for any liquid hazardous waste.

All wastes will be disposed of and documented in accordance with all applicable legislation and best practice.

8 MONITORING AND IMPLEMENTATION OF THE CEMP

8.1 Complaints, Comments and Enquiries

Any complaint related to the Site will be dealt with by the Project Manager. The source of the complaint will be investigated immediately. If possible, the source of the complaint will be stopped, moved, or modified immediately. All complaints must be recorded, including details of the complaint and any required corrective actions.

8.2 Site Visits and Evaluation of Compliance

A pre-construction Site walkover by a suitably qualified Ecologist will take place, followed by additional Site visits by the ECoW as required. Additionally, pre-commencement otter surveys and marine mammal observation surveys will be conducted by the MMO during piling works.

These visits will aim to ensure compliance with procedures set out in the CEMP and environmental conditions established under planning.

This will be done through a Site inspection and auditing various aspects of the works, including documentation. Checklists for compliance will be prepared, corrective actions will be required for any non-compliances identified, and follow-up surveys will be scheduled to ensure compliance.

All monitoring results and reports detailing the compliance or otherwise of the works will be maintained in a database and available at the Site office for inspection. In the event of an incident, an incident report will be completed, documenting both the cause of the incident and the corrective action taken to address it. These incident forms will be available for inspection within the Site office.

A summary of the monitoring actions to be undertaken throughout the construction phase is presented in Table 8-1.

8.3 Control of Records

Environmental records, including waste management records, will be maintained in accordance with the respective company procedure and legal requirements. The records are to be maintained, in either hard copy or electronic format, as required by the individual procedure that the records relate to, in such a way that they are readily identifiable, retrievable, and protected against damage, deterioration or loss. The procedure that the records relate to also specifies the retention time for the records and who has the authority to dispose of them. Reports will be issued as required to the relevant authorities.

Table 8-1: Monitoring to Undertake During Construction Phase

Aspect	Monitoring Actions	Frequency	Responsible Parties
Biodiversity	Pre-construction surveys for otter, bats, invasive species, and waterbirds; monthly otter monitoring; MMO monitoring during piling; wetland bird vantage point surveys; monitoring of invasive alien species prior to soil movement/fill import; ongoing ecological monitoring by ECoW.	Pre-construction & ongoing during works	ECoW / Specialist Ecologists / MMO
Water	Real-time monitoring in the Lower Suir Estuary of suspended solids (or a suitable proxy such as turbidity) and pH during dredging/reclamation; daily visual inspections for spills and leaks at refuelling/storage areas as well as silt fence integrity and stormwater runoff.	Continuous during works / Weekly / Daily	Contractor / Environmental Consultant
Noise & Vibration	Noise monitoring at site boundaries; vibration monitoring near sensitive receptors; underwater noise monitoring during piling with MMO observations.	Weekly / As required / Continuous during piling	Contractor / Acoustic Consultant / Engineer / MMO
Air Quality / Dust	Dust deposition monitoring at agreed boundary locations; daily visual inspections of haul roads, stockpiles, and material handling.	Monthly / Daily	Contractor / Environmental Consultant
Soils & Geology	Inspection of excavated soils for segregation of clean/inert and contaminated material; geotechnical monitoring during piling and excavation.	Ongoing during excavation / As required	Contractor /Engineer / Environmental Consultant
Climate / GHG	Auditing of construction plant and fuel use under the GHG Emissions Reduction Plan; monitoring of idling times and energy use.	Quarterly / Ongoing	Contractor / Client Rep
Population & Human Health	Community liaison and monitoring of complaints/responses.	Ongoing	Project Liaison Officer
Archaeology & Cultural Heritage	Archaeological monitoring of ground and riverbed works under licence; recording and reporting of finds; inspection of quay works to confirm terram membrane installation.	Continuous during intrusive works / As required / Once	Licensed Archaeologist / Conservation Specialist
Traffic & Transport	Monitoring of construction traffic flows, particularly at peak times, to ensure junctions operate within capacity; monitoring of HGV routing compliance to ensure use of strategic road network and avoidance of residential areas.	Weekly during peak / Daily ongoing	Contractor / Traffic Management Supervisor / Site Logistics Manager

Aspect	Monitoring Actions	Frequency	Responsible Parties
Resources, Energy & Waste	Monitoring implementation of the Resource and Waste Management Plan (RWMP), including segregation, reuse, recycling, and documentation of consignments; handling, segregation and licensed disposal of hazardous waste; monitoring of energy use and efficiency.	Ongoing / As required / Quarterly	Contractor / Licensed Waste Contractor / Client Rep

9 IMPLEMENTATION, REVIEW AND TRAINING

The Appointed Project Manager will be responsible for developing an updated Site-specific CEMP prior to commencement of Site works. The Site Manager will be responsible for ensuring compliance with the CEMP. Each subcontractor will be responsible for appointing a point of contact for matters related to environmental protection.

Copies of the CEMP will be made available to all personnel onsite. All Site personnel and subcontractors will be instructed about the CEMP's objectives and informed of the responsibilities that fall upon them as a consequence of its provisions. All staff will be required to have the appropriate training and certification to undertake their specific roles.

All staff will receive environmental awareness training as part of their Site induction to ensure they are aware of their responsibilities under the CEMP. This will include:

- Site induction, including relevant environmental issues;
- Environmental posters and site notices;
- Method statement and risk assessment briefings;
- Toolbox talks, including instruction on incident response procedures; and,
- Key project-specific environmental issues briefings.

9.1 Training Awareness and Competence

Site personnel shall be trained appropriately to ensure they are competent to perform tasks that have the potential to cause a significant environmental impact as part of the Proposed Development. Competence is defined in terms of appropriate education, training and experience.

All managers and supervisors will be briefed on the CEMP.

Method Statements will be prepared for specific activities before the work commences and will include environmental management / best practice measures and emergency preparedness appropriate to the activity covered. The Construction Manager will review key Method Statements prior to their issue.

Method Statement briefings will be given before personnel carry out key activities for the first time.

10 CONCLUSIONS

This CEMP document outlines the management procedures to enable the Appointed Site Manager to respond to potential environmental risks from construction activities on-site. The final CEMP will cover all aspects of the construction phase of the Proposed Development.

The appointed Contractor will be required to develop an updated CEMP prior to the commencement of any construction works and, if required, this will be submitted to the Planning Authority for approval.

The implementation of all the environmental management measures outlined in this CEMP will ensure that the construction programme will be completed without significant adverse effects on the surrounding environment.

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