

Environmental Impact Assessment Report (EIAR) – Volume 2

Chapter 20 – Schedule of Commitments

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

Port of Waterford Company

Port of Waterford, Belview, Co. Kilkenny



20 SCHEDULE OF COMMITMENTS

Table 20-1 and Table 20-2 outline the environmental commitments which will be undertaken as part of the Proposed Development during both the Construction and Operational Phases.

Please note that design measures have not been included in this chapter, please refer to Chapter 3 – Description of the Proposed Development for all design-related measures. In addition, please note that mitigation measures that apply to multiple environmental aspects (e.g., Biodiversity and Underwater Noise) are listed only once under the most relevant heading.

Table 20-1: Schedule of Commitments – Construction Phase

Construction Phase - Commitments
<p>Pre-construction</p> <ul style="list-style-type: none"> • A detailed Construction Environmental Management Plan ('CEMP') will be submitted to Kilkenny County Council ('KCC') in advance of works commencing; • The final CEMP will, as a minimum, include the following: <ul style="list-style-type: none"> ○ Incorporate all Environmental Commitments and Mitigation Measures identified in the EIAR and the NIS submitted as part of this planning application, and any conditions of any permission as may be granted and any further requirements of Statutory Bodies; ○ Provide a method of documenting compliance with these Environmental Commitments and Mitigation Measures; ○ List all relevant environmental legislative requirements; ○ State methods by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment; ○ All personnel working onsite will be trained and made aware of the mitigation measures detailed within the CEMP; ○ The biosecurity measures that will be implemented on-site will be outlined in detail; and, ○ A Greenhouse Gas ('GHG') Emissions Reduction Plan will form part of the CEMP. • During the preparation of the CEMP, consultation will be undertaken with stakeholders, particularly the NPWS and the IFI.

Construction Phase - Commitments

- The following guidance will be referred to in the creation of the CEMP and will be followed during the Construction Phase:
 - CIRIA C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors;
 - 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;
 - CIRIA C648 - Control of Water Pollution from Linear Construction Projects: Technical Guidance;
 - CIRIA C649 - Control of Water Pollution from Linear Construction Projects: Site Guide;
 - CIRIA C674 – The Use of Concrete in Maritime Engineering – Guide to Good Practice;
 - CIRIA C811 – Environmental Good Practice on Site (5th edition);
 - CIRIA C753 – The SuDS Manual;
 - CIRIA C744– Coastal and Marine Environmental Site Guide (Second Edition);
 - IFI, 'Requirements for the Protection of Fisheries Habitat during Construction and Development';
 - NRA, 'Guidance for the Treatment of Otters Prior to the Construction of National Road Schemes';
 - National Roads Authority ('NRA') 'Guidance for the Treatment of Bats Prior to the Construction of National Road Schemes';
 - NRA, 'Guidance on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads';
 - Department of Arts, Heritage and the Gaeltacht ('DAHG'), 'Guidance to Manage the Risk to Marine Mammal from Man-made Sound Sources in Irish Waters';
 - Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 1;
 - Guidance on Marine Baseline Ecological Assessments and Monitoring Activities for Offshore Renewable Energy Projects Part 2;
 - OSPAR - Guidelines for the Management of Dredged Material; and,
 - BS 5228-1 + A1:2014: Code of Practice for noise and vibration control on construction and open sites - Part 1: Noise [18] and Part 2 Vibration.

Construction Phase - Commitments
<ul style="list-style-type: none"> The following plans will be prepared by the appointed contractor in accordance with best practice guidance and submitted to KCC prior to the commencement of the Construction Phase: <ul style="list-style-type: none"> A Dust Management Plan ('DMP'); A Resource and Waste Management Plan ('RWMP'); and, A Construction Traffic Management Plan ('CTMP'). <p>The following pre-commencement surveys will be undertaken:</p> <ul style="list-style-type: none"> In advance of the construction works commencing, a 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; and, Consultation will be undertaken with the NPWS in relation to whether a derogation licence for the construction works will be required for potential temporary disturbances to otter.
Construction – General
<ul style="list-style-type: none"> Construction works will be restricted to normal business hours: 07:00 to 19:00 Monday – Friday and 07:00 – 14:00 on Saturday. Site work outside these hours may take place by exception; and, Pile installation works will be limited to 08:00-18:00 Monday – Friday and 08:00-14:00 on Saturdays. Piling work outside these hours may take place by exception.
Biodiversity
<p><u>General Construction Measures</u></p> <ul style="list-style-type: none"> An Ecological Clerk of Works ('ECoW') will be appointed for the duration of the project. The ECoW will inspect the Site in advance of works commencing and will undertake Site inspections as well as attend the Site as required during the works, to ensure that all of the works will be completed in line with the CEMP and all wildlife legislation; If protected or notable species are encountered during the operations at the Site, the ECoW will be contacted for advice;

Construction Phase - Commitments

- 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 notable and protected species. Everybody working onsite must understand the role and authority of the ECoW.

Protection Measures for Water Quality

- Mitigation measures will be put in place in order to ensure that construction works and the operations of the Proposed Development will not result in any deterioration to local water quality and subsequently no adverse effects to species and habitats downstream of the Site.

Protection Measures for Mixed Broadleaved Woodland

To ensure that no impacts occur on any nearby trees, care will be required to protect the sections of trees on-site from indirect disturbance during construction, and care will be required to prevent disturbance to root systems. The standard measure to achieve this is that every effort will be made to minimise works within the outer canopy limit of the trees:

- Trees close to construction areas will be fenced off to prevent accidental disturbance from construction vehicles. These barriers will remain in place for the duration of the works to prevent accidental disturbance and define the limits for construction vehicles and other construction staff;
- Care will be required to prevent disturbance to root systems – a buffer zone of 5m of unexcavated ground will be maintained along the trees;
- During any works close to the buffer zone, should the operatives encounter any root smaller than 35mm in diameter, they will be pruned carefully with an appropriate cutting tool such as a saw or secateur and roots larger than this will require consultation with an arboriculture specialist;
- No materials, equipment or machinery will be stored within the root protection area ('RPA'). Storage of materials will be sited as far as possible from the trees;
- No materials or equipment will be stored within the buffer zone;
- Care will be taken when planning Site operations to ensure that wide or tall loads or plant with booms, jibs and counterweights can operate without coming into contact with trees;

Construction Phase - Commitments

- Notice boards, wires, etc., will not be attached to any trees. Site offices, materials and contractor parking will all be outside the RPAs of the trees; and,
- In order for hedge protection measures to work effectively, all personnel associated with the operation of machinery will be familiar with the above principles for the protection of trees.

Measures for the Prevention of Underwater Noise Disturbances

In order to ensure no significant impacts occur to any species that may utilise underwater habitats, mitigation measures to reduce and mitigate against noise disturbances will be implemented in line with recommendations made for pile driving by the Department of Arts, Heritage and the Gaeltacht ('DAHG') in the *'Guidance to Manage the Risk to Marine Mammal from Man-made Sound Sources in Irish Waters'*.

- 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:
 - 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;
 - 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;
 - Pile driving activity will not commence if marine mammals are detected within the Monitored Zone during the pre-start monitoring;
 - 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,

Construction Phase - Commitments

- 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'):
 - 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). It 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;
 - 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.

Protection Measures for Breeding Birds, Waterbirds and Wildfowl

- All vegetation clearance will be undertaken outside of the nesting bird season (1st March to 31st August), as per Section 40 of the Wildlife Act 1976, as amended by Section 46 of the Wildlife (Amendment) Act 2000;

Construction Phase - Commitments

- In the event that 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 systematically 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.

Protection Measures for Nocturnal Species

- All temporary lighting used during the Construction Phase will be sensitive for local wildlife while still providing the necessary lighting for human usage;
- Where possible, the following measures will be implemented for lighting at the Site during the Construction Phase:
 - Avoidance of excessive lighting;
 - 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.

Biosecurity Measures for Invasive Species

- The following biosecurity considerations will be implemented onsite to ensure that no invasive species will be introduced:
 - All vehicles, machinery and any other equipment that will be used for the works will be washed and cleaned as required prior to arrival on-site to prevent the spread of invasive alien species ('IAS');
 - Before machinery or equipment will be unloaded at the Site, the equipment will be visually inspected to ensure that all adherent material and debris have been removed;
 - Any vehicles and machinery that have not been deemed to be clean will not be permitted entry to the Site;

Construction Phase - Commitments

- All materials to be imported to the Site, including additional planting for the Biodiversity Enhancement Area, will be sourced from a reputable supplier, and records of all material / supplies to the Site will be maintained;
- In advance of works, all site personnel will receive an induction regarding invasive species;
- Where risk assessments indicate potential presence of priority invasive alien species ('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,
- 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.

Soils and Geology

Land Reclamation

In order to minimise the impacts on land and soils during the land reclamation works, the following measures will be implemented:

- 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.

Oil Storage / Refuelling

Construction Phase - Commitments

In order to minimise the impacts on land and soils from potential spillages during the Construction Phase, the following measures will be implemented:

- 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 (bund 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 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 bowers 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:
 - Fuel will be delivered to plant on-site by a dedicated tanker or in a delivery bowser dedicated to that purpose;
 - In the case of a bowser, the driver or supervising foreman will check the delivery bowser daily for leakage;

Construction Phase - Commitments

- The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur;
- Where the nozzle of a fuel pump cannot be placed fully into the tank of a machine then a funnel will be used; and,
- 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; and,
- All valves will be of steel construction and the open and close positions will be clearly marked.

Specifically with regard to soils, the following will be adhered to:

- 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.

Soil Management / Stock Piling

Stockpiling of excavated material will be appropriately managed onsite during the Construction Phase. To minimise the overall impact on soils arising during the construction works, the following mitigation measures will be adhered to;

- Temporary berms will be constructed around stockpiles to prevent run-off during rain events;

Construction Phase - Commitments

- 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; and,
- All stockpiles will be maintained at a minimum distance of 20m from the Lower River Suir Estuary.

Specific control measures will be specified in the Resource Waste Management Plan ('RWMP') for the handling and temporary storage of any potentially contaminated materials that may be encountered during the works.

Cement Handling During Construction

Mitigation measures related to the use of poured concrete will include:

- 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;
- 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.

Water

The following mitigation measures will be adhered to during the Construction Phase to ensure the protection of surface water and groundwater:

- Silt fences will be installed at strategically selected onshore locations during the Construction Phase to safeguard the receiving surface waters from elevated levels of suspended solids in stormwater runoff;

Construction Phase - Commitments

- Continuous water quality monitoring using real-time sensors measuring pH and suspended solids, both upstream and downstream of the in-water works, using buoy-mounted or otherwise appropriate monitoring platforms;
- The Contractor will provide method statements for weather and tide / storm surge forecasting and continuous monitoring of water levels in the Lower Suir Estuary. If a flood event is forecasted, the Contractor's method statements will include the removal of site materials, fuels, tools, vehicles and persons from flood zones to minimise the risk of input of sediment or construction materials into the Lower Suir Estuary; and,
- The Contractor's emergency procedures will take into account the Port of Waterford's Pollution Plan.

Air Quality

General Construction Dust Mitigation Measures

- Site Management:
 - Will make the complaints log available to the Local Authority when asked;
 - A wheel wash facility will be provided at each exit point for the duration of the construction works. All vehicles will be required to pass through the wheel wash facility before exiting the Site to the public road network. The wheel wash must be kept in place and used throughout the critical dirt-generating activities of the construction works. Where appropriate, water supplies servicing the wheel wash will be from recycled sources. All waters shall be drained through appropriate filter material prior to discharge or collected for off-site disposal;
 - Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the logbook; and,
 - Records of any dust complaints will be made, and the appropriate/time action will be taken when required.
- Monitoring:
 - Carry out regular inspections of and/or around the boundary of the Site; and,
 - The frequency of the site inspections will be increased during high dust-generating activities and during prolonged dry or windy conditions, particularly in the case of earthworks.

Construction Phase - Commitments

- Site Preparation:
 - Erect barriers around the Site, where possible;
 - Keep fencing, barriers and/or scaffolding clean and free of dust;
 - Remove materials that have the potential to produce dust from the Site as soon as possible unless being reused on-site. If being used on-site, they will be covered or wetted to prevent wind whipping;
 - Plan Site layout so that dust-generating activities will be located away from receptors, as far as is possible; and,
 - Cover or fence stockpiles to prevent wind whipping.
- Construction vehicles:
 - The use of diesel- or petrol-powered generators will be avoided, where possible;
 - Traffic to and from the site will be managed to avoid congestion where possible; and,
 - Vehicle engines will be switched off when stationary - no idling.
- Construction Works:
 - Use cutting, grinding, or sawing equipment fitted with suitable dust suppression techniques such as water sprays;
 - Ensure there will be a water supply on-site for the suppression of dust capable of reaching all parts of the Site;
 - Minimise drop heights from handling equipment will be implemented across all activities; and,
 - Ensure equipment will be readily available to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Waste Management:
 - No burning of waste will be permitted on-site.

Activity Specific Mitigation Measures

- Construction:
 - Utilise water suppression where possible / suitable;

Construction Phase - Commitments
<ul style="list-style-type: none"> ○ Scabbing (Roughening of concrete surfaces) will be avoided where possible; ○ Sand and other aggregates will be stored in enclosed or bunded areas unless required for a particular purpose; ○ Bulk cement or other dried powder material will be delivered in enclosed trucks; and, ○ For smaller supplies of fine power materials, the bags will be sealed after use and stored appropriately to prevent dust. ● Earthworks <ul style="list-style-type: none"> ○ Stabilise stockpiles as soon as possible. ● Trackout <ul style="list-style-type: none"> ○ Water-assisted dust sweeper(s) will be used on the access and local roads, to remove, as necessary, any material tracked out of the Site; ○ Dry sweeping of large areas will be avoided; and, ○ On-site haul routes will be inspected for integrity, and necessary repairs will be instigated to the surface as soon as reasonably practicable.
Climate
<ul style="list-style-type: none"> ● Where possible, materials for construction will be sourced locally, minimising transport requirements; ● Possibilities for re-use of clean, non-hazardous demolition material in construction works on-site will be considered following appropriate testing to ensure the material will be suitable for its proposed end use; ● Transport service, where practicable, will be provided for construction workers arriving at the Site during the Construction Phase; ● Where possible, idling plant will be switched off to reduce fuel use; ● Where possible surplus materials generated during the Construction Phase will be reused or recycled; and, ● Where continuous Site lighting will be required, it will be low energy.
Terrestrial Noise and Vibration

Construction Phase - Commitments

Noise

As outlined within BS5228-1, the following practices will be implemented during construction:

- Turning off / powering down plant when not in use;
- Turning off HGVs when not in use;
- Reduction in drop heights of incoming materials;
- Developing the boundary embankments during early stage of works;
- Appointing project liaison officer to communicate with locals regarding noise works, their duration and organising Construction Phase noise monitoring;
- Strict controls on construction hours to prevent noise works occurring early morning or into the evening period;
- Positioning of hoarding and enclosures around noise works or plant as required;
- Inclusion of response procedure within the CEMP to noise complaints and noise breaches;
- All major compressors will be 'sound-reduced' models fitted with properly lined and sealed acoustic covers, which will be kept closed whenever the machines are in use;
- Any ancillary pneumatic percussive tools will be fitted with mufflers or silencers of the type recommended by the manufacturers;
- Machines in intermittent use will be shut down in the intervening periods between work;
- Ancillary plant such as generators, compressors and pumps will be placed behind existing physical barriers, and the direction of noise emissions from plant, including exhausts or engines, will be placed away from sensitive locations, in order to cause minimum noise disturbance;
- Handling of all materials will take place in a manner which minimises noise emissions; and,
- Audible warning systems will be switched to the minimum setting required by the Health & Safety Authority.

Vibration

Construction Phase - Commitments
<ul style="list-style-type: none"> No vibration effects were predicted to occur near sensitive receptors. However, in the event of a requirement, due to ground conditions, an alternative piling method will have to be used; it will need to be reviewed by a competent acoustician to ensure that there will be no vibration effects at the nearest buildings, especially protected structures near the Site.
Underwater Noise and Vibration
<ul style="list-style-type: none"> For diving, warning notices will be posted at nearby access points, and local information sessions will be organised to indicate the area of concern. Collaboration will be conducted with any groups that need to dive within the zone.
Landscape and Visual
No Construction Phase mitigation measures required.
Terrestrial Cultural Heritage
No Construction Phase mitigation measures required.
Underwater Cultural Heritage
<p>Impact avoidance mitigation strategies will be implemented to protect underwater archaeological sites through the following procedures:</p> <ul style="list-style-type: none"> A suitable terram membrane will be placed to act as a separation barrier between the quay wall and the introduced fill / overburden to ensure no impacts will occur to the historic quay during construction works; and, Archaeological monitoring of intertidal and riverbed works will be carried out under licence from the Department of Housing, Local Government and Heritage ('DHLGH'), with the provision to resolve fully any archaeological material recovered during the initial phases of the Construction Phase. <p>Archaeological monitoring of specific initial construction activities will be undertaken within the nearshore and foreshore area and will be completed in accordance with a series of measures:</p>

Construction Phase - Commitments

- An archaeologist experienced in maritime archaeology will be retained by the Port of Waterford for the duration of the relevant works, i.e. inter-tidal / foreshore and seabed disturbances, specifically the capital dredging and the placement of the first layer of rock infilling works associated with the Site;
- An Archaeology Management Plan will be prepared by the archaeologist to prepare the protocols that ensure proper management and response to archaeological monitoring, recording and resolution that will be required in the course of the project;
- Archaeological monitoring will be carried out by suitably qualified and experienced maritime archaeological personnel licensed by the DHLGH, during the necessary construction works. The monitoring will be undertaken in a safe working environment that will facilitate archaeological observation and the retrieval of objects that may be observed and that require consideration during the course of the works. The monitoring will include a finds retrieval strategy that is in compliance with the requirements of the National Museum of Ireland;
- Discovery of archaeological material: In the event of archaeologically significant features or material being uncovered during the construction phase, machine work will cease in the immediate area to allow the archaeologist/s to inspect any such material;
- Archaeological material: Once the presence of archaeologically significant material has been established, full archaeological recording of such material will be recommended. If it will not be possible for the construction works to avoid the material, full excavation will be recommended. The extent and duration of excavation will be agreed with the licensing authorities;
- Archaeological dive team: Where any archaeologically significant / potential material has been identified in the course of the seabed disturbance activities, these works will stop pending a dive inspection by an archaeological dive team. The dive team would deal with any rescue excavation required. The dive team and all in-water work will conform to the Port's safety protocols for Diving at Work;
- Secure wet storage facilities will be provided onsite to facilitate the temporary storage of artefacts that may be recorded during the course of the site work;
- Buoying / fencing of any such areas of discovery will be necessary if discovered during excavation;
- Machinery traffic during construction will be restricted to avoid any identified archaeological site/s and their environments;
- Spoil will not be dumped on any of the selected sites or their environments; and,

Construction Phase - Commitments
<ul style="list-style-type: none"> It will be a condition of the archaeological license that a detailed project report will be lodged with the DHLGH within 12 months of completion of site works. Artefacts recovered during the works will meet the requirements of the National Museum of Ireland in terms of recording, conservation and storage.
Material Assets – Traffic and Transport
<ul style="list-style-type: none"> The Port of Waterford will adhere to a routing policy to ensure all movements will be made via the strategic road network to avoid HGV's passing through residential areas as far as is practicable; and, The Port of Waterford will employ a policy of safety and environmental awareness for all HGV drivers accessing the site.
Material Assets – Material Resources, Energy & Waste
<p><u>Material Resources and Waste</u></p> <p>Mitigation measures to reduce the demand for material resources and the volume of waste produced will include:</p> <ul style="list-style-type: none"> The re-use of appropriate demolition materials and dredge material in the reclamation works; The re-use of existing rock armour; Demolition works will be planned to ensure the maximum possible level of re-use; Clean, non-hazardous and inert demolition materials not suitable for re-use within the Site will be sent to authorised facilities for reuse, recovery or recycling where appropriate; Rock and aggregates required for the construction phase will be sourced from local quarries as much as practicable; Careful auditing of procurement to reduce excess ordering; Materials ordered on 'as needed' basis to reduce excess materials; 'Just-in-time' delivery of materials to reduce risk of material spoilage / damage; Encouragement of careful working practices to reduce mis-cuts;

Construction Phase - Commitments

- Implement supply chain systems that permit the return of packaging, surplus materials and, where possible, off-cuts;
- Segregation of construction waste to maximum recovery / re-use / recycling;
- All waste produced through the construction phase will be managed in full compliance with all relevant legislation and will only be removed from the Site by appropriately licensed waste carriers. All waste shipments will be correctly documented, and all waste records will be retained; and,
- In the event of hazardous waste being produced during the construction phase (including any material removed during site preparation works), such wastes will be segregated, contained, classified, transported and disposed of by appropriately permitted waste handlers in full compliance with all relevant legislation.

Energy

The following measures will be implemented to ensure the efficient use of energy during the Construction Phase:

- Energy-efficiency policies, including an avoidance of unnecessary idling of engines;
- Use of higher-efficiency equipment;
- LED lighting; and,
- Automated lighting systems.

Material Assets – Water Supply & Wastewater

Water Supply

All demolition and construction works will be carried out in line with relevant Uisce Eireann and CIRIA guidance. The following recommended methods for conserving water will be used where possible:

- Waterless / low-water systems (e.g. for hygiene facilities);
- High-pressure water-efficient hoses;
- Percussion taps;
- Twin-flush toilets;

Construction Phase - Commitments
<ul style="list-style-type: none"> • Use of brooms rather than water to clean surfaces; • Cleaning of tools in buckets rather than in running water; • Use of storm-water for dust suppression; and, • Maintenance of water delivery systems to reduce leaks / drips.

Table 20-2: Schedule of Commitments – Operational Phase

Operational Phase - Commitments
Biodiversity
<p><u>Lighting Strategy</u></p> <ul style="list-style-type: none"> • A sensitive lighting strategy will be implemented across the entirety of the Proposed Development to minimise light spillage from the Site; • The lighting strategy has been designed to minimise potential effects on nocturnal species in line with the Bat Conservation Trust Guidelines on '<i>Bats and Artificial Lighting in the UK</i>'; • This strategy involves avoiding excessive lighting and the use of 2700Kelvin light temperature bulbs, as this reduces the blue light component for bats; • All lighting will be downward-facing and only directed where needed; and, • Following the installation of the lighting for the Proposed Development, the project ecological clerk of works will undertake a further site inspection in order to check the lighting patterns and lux levels along the Site boundaries. <p><u>Biodiversity Enhancement Area</u></p> <ul style="list-style-type: none"> • As part of the Proposed Development, an area of ca. 1.8ha in size will be enhanced and protected to provide suitable habitats for otter, wetland bird species and other local biodiversity. The proposed biodiversity enhancement measures will include:

Operational Phase - Commitments

- The creation of a pond complex that can naturally recolonise with wetland species;
- The planting of riparian woodland species to bolster existing hedgerow / treelines and create ca. 10-15m riparian buffer strips;
- Installation of wooden post and rail fencing to exclude cattle from the area but allow the movement of other species such as fox, otter, badger and deer;
- Installation of an artificial otter holt;
- Installation of an artificial sand martin hotel;
- Installation of an artificial kingfisher nest bank;
- Installation of bat boxes;
- Creation of hibernaculum and habitat piles; and,
- The creation of insect hotels and deadwood habitats.

Monitoring

- The project ECoW will also undertake the necessary post construction monitoring to ensure all of the biodiversity enhancement measures will be successfully implemented; and,
- Post construction monitoring will be undertaken by a suitable qualified and experienced ecologist in order to ensure no adverse effects have occurred to wetland bird species or otter as a result of the Proposed Development.

Soils and Geology

The following mitigation measures will be employed by the ORE operators to prevent any potential impact on soils and geology:

- The integrity and water-tightness of underground pipes, tanks, bunds and containers will be checked at regular intervals in accordance with relevant guidelines;
- Suitable absorbent materials will be kept on-site to deal with any spills; and,
- Loading and unloading of fuels will be carried out in an area protected against spills and runoff in accordance with relevant EMS procedures.

Operational Phase - Commitments
Water
<p>Mitigation measures will include a number of design measures as well as operational procedures, as follows:</p> <ul style="list-style-type: none"> • Interceptors will be regularly maintained; and, • The Port has certified ISO14001 in place, with relevant procedures governing hydrocarbon management and spill containment procedures. The ORE facility operators will be required to implement similar procedures to those of the Port and to enact best available environmental practices relevant to their activities.
Air Quality
<p><u>Loading / Unloading Vessels and Cargo Handling Equipment</u></p> <p>Whilst no significant effects have been identified for the dust emissions from loading / unloading vessels at the Site, the following mitigation measures will be implemented on-site to minimise dust emissions:</p> <ul style="list-style-type: none"> • Minimise drop heights where possible; and, • Utilise hoppers for granular / pelletised materials, when practical and/or possible.
Climate
<p>A number of mitigation measures will be in place to further reduce GHG emissions related to the Proposed Development. These measures are detailed below:</p> <ul style="list-style-type: none"> • The use of alternative low-carbon fuel sources in freight vehicles where practicable; • As part of the wharf extension, the pontoons will be designed to provide electricity for future electrification of the CTVs; • The POW already utilises a fleet of electric vehicles for staff use and will continue to do so; and, • Transport service or carpooling, where practicable, will be provided for employees arriving to the Site to avoid the use of single-occupancy vehicles.

Operational Phase - Commitments	
Terrestrial Noise and Vibration	
<u>Noise</u>	<ul style="list-style-type: none"> All plant (fixed and mobile) associated with the Proposed Development will be maintained to a high standard to reduce any tonal or impulsive sounds; Turning off HGVs when not in use; and, On-Site vehicles associated with the Proposed Development operations will be equipped with white noise/broadband sirens to minimise noise during reversing activities. Port of Waterford follows a policy of proactively identifying and mitigating noise at the Site, as per the Port's Environmental Policy.
<u>Vibration</u>	No Operational Phase mitigation measures required.
Underwater Noise and Vibration	
	No Operational Phase mitigation measures required.
Landscape and Visual	
	No Operational Phase mitigation measures required.
Terrestrial Cultural Heritage	
	No Operational Phase mitigation measures required.
Underwater Cultural Heritage	
	No Operational Phase mitigation measures required.

Operational Phase - Commitments
Material Assets – Traffic and Transport
<p>The following mitigation measures were designed to alleviate any adverse effects from operational HGV traffic:</p> <ul style="list-style-type: none"> • The Port of Waterford will adhere to a routing policy to ensure all movements will be made via the strategic road network to avoid HGV's passing through residential areas as far as is practicable; and, • The Port of Waterford will employ a policy of safety and environmental awareness for all HGV drivers accessing the site.
Material Assets – Material Resources, Energy & Waste
<p><u>Energy</u></p> <ul style="list-style-type: none"> • The current POW Environmental Policy will be expanded to cover the Proposed Development, which includes the following objectives: <ul style="list-style-type: none"> ○ To reduce consumption of natural resources and to use energy responsibly and efficiently; ○ To continuously assess our environmental performance; and, ○ To continually improve by setting and reviewing environmental objectives and targets. • The ORE support offices and warehouses will be designed with energy efficiency and the minimisation of power usage as a priority; and, • Lighting will be reduced to a minimum while not in use. <p><u>Waste</u></p> <ul style="list-style-type: none"> • All waste generated during the operational phase of the Proposed Development, including all waste landed from the SOVs and the CTVs, will be managed in compliance with the Port of Waterford's existing ISO14001-certified Environmental Policy and with all relevant legislation; • All wastes received from SOVs and CTVs will be placed into correctly labelled receptacles; • Wastes arising from the typical repair and maintenance of the turbines will be segregated and sorted for reuse or recycling where possible;

Operational Phase - Commitments

- All wastes produced across the Proposed Development will be appropriately segregated prior to storage in suitable identified containers;
- All waste will be handled in full compliance with relevant legislation and guidance;
- All waste will be collected by appropriately-licensed waste handlers / carriers;
- Records will be retained for each waste consignment, detailing the volumes and types of each waste, the recipient, the final destination and the ultimate treatment / disposal method; and,
- Full details of wastes removed from the Site will be submitted to SEAI as part of the Port's ECOMERIT certification.

Material Assets – Water Supply & Wastewater

Water Supply

- The ORE operators will be required to review water usage at their facilities, with the objective to continuously seek opportunities to use recycled water, thereby further improving water efficiency.

Wastewater

- No specific Operational Phase mitigation measures are required.