

MWP

REMEDIAL ENVIRONMENTAL IMPACT ASSESSMENT

Ros an Mhíl Deep Water Quay

Chapter 16 Schedule of Mitigation

Department of Agriculture, Food and the Marine

October 2025

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Project No.	Doc. No.	Rev.	Date	Prepared By	Checked By	Approved By	Acceptance Code / Status
24984	6002	A	24/10/2025	EP/AW/MT	CF/MT	CF	Final

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16. Schedule of Mitigation

16.1 Introduction

One of the principle objectives of a Remedial EIAR is to identify mitigation measures needed to off-set or remedy any impacts that are occurring or have occurred as a result of the development.

This rEIAR has assessed the impacts and resulting effects likely to have occurred, or which are still occurring, as a result of the Unauthorised Development on the various aspects of the receiving environment.

All mitigation measures and monitoring activities implemented and carried out during the development works completed to date for the Deep Water Quay at Ros an Mhíl are outlined in **Section 16.2**. These measures were implemented to ensure that the potential impacts on the receiving environment were minimised and avoided where possible.

The requirement for any additional remedial mitigation is considered in **Section 16.4**.

16.2 Mitigation Measures Undertaken During the Works

The following mitigation and best practice construction measures were applied during the development works. January 2023 to May 2024.

16.2.1 Blasting and Dredging

- The contractor appointed a suitably qualified subcontractor for the blasting works
- The Blasting subcontractor was approved by client (DAFM)
- The blasting subcontractor provided a Risk Assessment Method Statement (RAMS) for the blasting, drilling and dredging works including all suitable control measures that were put in place
- The contractor engaged a Marine Mammal Observer for the duration of the dredging, drilling and blasting works.
- The blasting sub-contractor complied with all recommendations from the Marine Mammal Specialist within the limits of the required safety procedures and standards.

16.2.2 Chemical management

- The contractor ensured that all hydrocarbons used during construction were appropriately handled, stored and disposed of in accordance with recognised standards as detailed by the GDG Guideline CEMP)
- Strict control of pollutants associated with the construction process were implemented. For all activities involving the use of potential pollutants or hazardous materials, it was ensured that materials such as concrete, fuels, lubricants and hydraulic fluids were carefully handled and stored to avoid spillages. Good housekeeping (daily site clean-ups, use of disposal bins, etc.) on the Site, and the proper use, storage and disposal of these substances and their containers were used to prevent contamination. Potential pollutants were adequately secured against vandalism and provided with proper containment;

- Adherence to WB Chemical Management Procedure - this was done by suitable bunded chemical Storage with 110% Capacity;
- Waste oils and hydraulic fluids were collected in leak-proof containers and removed from the site for disposal or re-cycling;
- Any diesel or fuel oils stored on site were bunded to 110% of the capacity of the storage tank;
- Where required, fuel was transported in a mobile, double skinned tank and a spill tray was used when refuelling (if taking place outside a compound area); and
- Fuels, lubricants and hydraulic fluids for equipment used on the site, as well as any solvents, oils, and paints were carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to codes of practice.

16.2.3 Concrete Management

Ready-mixed concrete was used during the construction phase for elements of the construction works on site. All ready-mix concrete was delivered from on-site concrete batching plants in sealed concrete delivery trucks, as required. The following measures were carried out with respect to management of concrete:

- Concrete, including, but not limited to, waste and wash-down water, were contained and managed appropriately to prevent pollution of water bodies;
- The contractor ensured the use quick setting mixes;
- Temporary Concrete washouts were provided adjacent to areas where concrete was being batched.
- Designated washouts were in the form of watertight skips
- Concrete washouts were located away from water bodies;
- Concrete pumps on site: all end of pump hoses were secured by ropes;
- Concrete skips on site: the Delivery chute were securely fastened using a lock chain or similar control measures to prevent any accidental spills; and
- At the loading points of the concrete skips / pumps, there were control measures in place to prevent concrete spilling from trucks and contaminating the ground and leaching into the water adjacent.

16.2.4 Refuelling Facilities

Refuelling of vehicles was carried out at a designated and controlled refuelling area at the site. The designated refuelling area was bunded to 110% volume capacity of fuels stored at the site. The designated refuelling area were located a minimum distance of 50m from surface water or site drainage features. For large machinery such as cranes, a drip tray was used, and spill kits and fuel absorbent pads were on hand. Suitable storage for contaminated materials were provided pending offsite removal of contaminated material.

16.2.5 Waste Management

All waste generated on site was managed in accordance with Waste Management Act 1996 and circular economy guidelines were adhered to on site. Where possible waste was reduced and recycled.

Where waste was required to be removed from site, including Construction and Demolition waste, it was removed by a suitably licensed haulier, to a suitable licensed facility. Copies of all dockets for waste removed from site were recorded on a waste log for the site.

Skip waste generated on site including General Waste, Timber Waste and Metal Waste was segregated for removal off site or for treatment. Records of same were recorded on site.

In order to reduce waste generation on site the contractor as far as possible ensured that:

- the correct amounts of materials were ordered and delivered only when needed;
- materials were not delivered to site damaged and unusable;
- the amount of packaging used by suppliers was minimized;
- Where possible a 'take back' system was organised with suppliers;
- Wastes were handled and stored correctly; and
- Reusing and recycling was carried out, wherever possible to limit the amount waste going to landfill.

16.2.6 Traffic and Transport management

A suitable Traffic Management was put in place to reduce the impact on the surrounding environment. Equipment used in transport including trucks/ tractors/trailers were appropriate for the site. Machinery and other equipment were serviced regularly and the roads were kept clean and free from debris.

The traffic mitigation measures applied during the previous works included:

- The construction vehicles arrived at the site in a staggered manner, meaning not all vehicles arrived at site at the same time;
- Construction and development HGV traffic were prohibited from using the Ballynahown Road "Back-Road" to access the site, and were directed to use the R336;
- Construction traffic avoided the peak hours 8-9am and 5-6pm, and or otherwise as agreed with Galway County Council. At the very least a reduction in traffic movements was applied during these time periods; and,
- To address safety concerns HGV traffic was avoided during school closing times where possible,
- Traffic management was addressed in a Construction Traffic Management Plan to minimise impacts on local and tourist traffic. The CTMP was prepared in consultation with Galway County Council, Gardaí Síochána and emergency services and incorporated best practice implementation for the free-flow of traffic during the construction stage.

16.2.7 Plant and Machinery management

- Machinery used on site was regularly inspected to ensure there was no leakage from them and to ensure the machinery would not cause contamination of watercourses.
- All plant and machinery on site was owned and managed by Ward and Burke (In the event of a breakdown or an emergency hired plant and machinery may have been required, the same was inspected ahead of use to ensure suitability).
- Plant and Machinery were inspected visually daily ahead of works
- Weekly records of inspections were recorded on GEOPAL GA2 Forms

- Ward and Burke Fitter for site carried out regular inspections and servicing on all owned plant and machinery to ensure suitable for use
- Any defects in plant or machinery were reported.

16.2.8 Staff Training

All construction staff received training in all aspects of Environmental Management including:

- Working adjacent to water
- Chemical Management on site
- Fuel Management on site
- Refuelling procedures
- Spill procures
- Habitat protection
- Used of concrete on site and correct concrete washout procedures on site
- House keeping
- Waste Management
- Noise and vibration Management
- Dust management on site
- Traffic management

Awareness and Training was carried out through Site Inductions, Toolbox Talks, Workshops on site.

16.2.9 Public Relations

The movement of construction vehicles was organised to cause minimal disturbance to public use of harbour roads and other areas. The contractor welcomed and made themselves available to attend meetings with Local Liaison Committees or groups when requested.

The contractor put in place the following mitigation measures from the 2017 EIS during the works undertaken from January 2023 to 20 May 2024.

16.2.10 Protection of Archaeological and Cultural Heritage

An experienced and suitably qualified maritime archaeologist with underwater/maritime/marine dredging experience and licensed under the National Monuments Act 1930-2004, was engaged and retained for the duration of the relevant works to carry out such archaeological monitoring.

In the event of archaeologically significant features or material begin uncovered during the construction phase, there were plans that machine works would cease in the immediate area to allow the archaeologist/s to inspect any such material, full archaeological recording of significant material was in accordance with archaeological licence requirements and the Statutory Orders. Provision for secure temporary storage facilities were made in advance of the Works so as to immediately house any finds recovered during the archaeological monitoring.

No archaeological features or materials were uncovered or encountered during the development works.

During the dredging works the marine archaeological environment was monitored and managed in accordance with the Underwater Unit of the National Monuments Service requirements. An Archaeological Method Statement was produced, in advance of works taking place, by an underwater archaeologist in consultation with

and approved by the Underwater Unit of the National Monuments Service, DAHRRGA. This method statement included methodologies, for ensuring that the potential cultural heritage features identified outside the development footprint were protected from inadvertent damage from dredging works.

No additional mitigation was recommended for proposed works as no cultural heritage features were identified or found either within the proposed footprint or in its immediate vicinity, and as such, it was predicted that no negative effects would occur.

In relation to the proposed development being located in a Gaeltacht region of county Galway, mitigation was put in place to ensure that the Irish language was maintained as the primary cultural expression of the community. Signage was in Irish and English with Irish being the predominant language. In addition, when awarding construction contracts DAFM sought to ensure that Contractors employed Irish speaking workers from within the Gaeltacht area. An Irish speaking Liaison Officer was employed on the project during this phase of development to facilitate this.

16.2.11 Noise

The following control measures were implemented by the contractors (Ward and Burke) during the construction process to prevent any potential significant noise effects during the construction phase.

- Proper maintenance of plant and machinery to minimise the noise produced by on-site operations;
- All vehicles and mechanical plant were fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Machines used intermittently were shut down or throttled back to a minimum during those periods when they were not in use;
- Any plant, such as generators or pumps, which were required to work outside of normal working hours, were surrounded by an acoustic enclosure; and
- Internal haul routes were kept well maintained;
- Plant was used in accordance with manufacturer's instructions. Care was taken to site equipment away from noise sensitive areas;
- Regular and effective maintenance by trained personnel as undertaken to keep plant and equipment working to manufacturers specifications;
- Blasting and dredging activities were limited to daytime works only; and,
- Procedures were in place for handling noise and vibration complaints.

16.2.12 Vibration Management

The contractor put in suitable controls for Vibration Monitoring. Vibration Monitors were put in place to monitor in real time vibration readings. The contractor put in place trigger limits and works were stopped to review whenever the trigger limits were exceeded.

The following mitigation measures were implemented at the site during all activities that may induce significant vibration:

- For activities confined to specific locations and of limited duration, measures were taken to minimise vibration due to plant and machinery on the site.
- Vibration monitoring was carried out at four sites immediately east and south of the development site, and one at the Martello tower +/1.1 km south of the site during the works.

16.2.13 Population and Human Health

A summary of construction phase mitigation measures relevant to population and human health are summarised in **Table 16-1**.

Table 16-1: Construction Mitigation Measures

Effect	Mitigation Measures
Settlement Patterns	No mitigation was required.
Land Use	Construction was confined to zoned harbour and foreshore lands, avoiding impacts on tourism facilities and residential or agricultural land. Temporary construction compound and facilities were located on previously developed surfaces that formed part of the port facilities.
Human Health	All works were undertaken in compliance with the Construction Environmental Management Plan (CEMP). Noise and vibration impacts were controlled through restricted working hours and environmental monitoring. Traffic was managed through scheduling and safety access protocols. Health and safety procedures were enforced by the appointed Project Supervisor Construction Stage (PSCS).
Employment and Economic Amenity	No mitigations.
Tourism & Amenity	Construction traffic was managed to avoid disruption to ferry services, fisheries activities and public access to the harbour. The development remained compatible with the maritime setting, and no public amenities were permanently affected.

16.2.14 Terrestrial Ecology

To minimize potential adverse effects on biodiversity during the construction phase, strict protocols were implemented regarding the handling of fuels, lubricants, and other hazardous substances. Refuelling of construction equipment, as well as the addition of hydraulic oils or lubricants to vehicles and machinery, was conducted no closer than 25 meters from the development boundary to prevent contamination of adjacent habitats. All mobile plant, such as generators, pumps, and cement mixers, were positioned over appropriately sized drip trays to contain any accidental leaks or spills.

Prior to deployment, all machinery was inspected for signs of leakage, particularly when operating near or within marine or aquatic habitats. Drip trays were mandatory beneath all plant working in or adjacent to these sensitive ecological zones. Storage areas for fuels and lubricants also maintained a minimum setback of 25 meters from the site boundary. Spill response kits and hydrocarbon absorbent materials were available onsite at all times, with personnel trained in their correct use to ensure prompt and effective spill management.

Given the likelihood of dust emissions during construction, a comprehensive Dust Minimisation Plan was developed and implemented. This plan aimed to reduce particulate matter release and its potential effect on surrounding flora and fauna. Key measures included:

- Regular cleaning and maintenance of site roads, including the sweeping of paved surfaces to remove mud and aggregates.
- Restricting the use of unpaved roads to essential site traffic only.
- Application of water sprays to roads and exposed surfaces prone to dust generation, particularly during dry or windy weather conditions.

- Enforcement of reduced vehicle speed limits on site roads to limit dust disturbance.
- Ensuring that all vehicles transporting dusty materials to off-site locations were fully enclosed or covered to prevent dust escape.
- Routine inspection and cleaning of adjacent public roads to maintain cleanliness and minimize dust migration.
- Design of material handling and stockpiling areas to reduce wind exposure.
- Deployment of water misting or spraying systems during particularly dusty operations.
- Periodic review and adjustment of the Dust Minimisation Plan to ensure the efficacy of implemented measures and the application of best practices throughout the construction phase.

An Invasive Species Management Plan was also prepared as part of the Construction Environmental Management Plan (CEMP). This plan outlined protocols to prevent the introduction and spread of invasive non-native species within the development area. All construction personnel received targeted training and induction on invasive species identification, control, and management prior to commencing work onsite.

Through the implementation of these comprehensive biodiversity protection measures, potential construction-related effects on terrestrial and aquatic ecosystems were anticipated to be negligible. Continuous monitoring and adaptive management were employed to ensure that biodiversity values were safeguarded throughout the construction period.

16.2.15 Land and Soils

Below is a list of mitigation measures that were applied to mitigate the expected land and soils effects associated with the construction phase during the previous works.

- In order to minimise disruption a Construction Environmental Management Plan (CEMP) was developed and implemented during the construction phase of the development. The CEMP was reviewed regularly and revised as necessary to ensure that the measures implemented were effective;
- Temporary storage of any spoil was carefully managed in such a way as to prevent any potential negative impact on the receiving environment, and the material was stored away from the sea;
- Excavated spoil was stockpiled at appropriate heights and slope angles;
- Bunds for the storage of chemicals and hydrocarbons were lined or constructed of materials resistant to damage by the materials stored therein. In addition, the capacity of such bunds were a minimum of 110% of the volume of the largest container stored therein. Bunds were designed in accordance with EPA guidance in relation to the storage of potentially polluting liquids ('IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities', 2004);
- Where refuelling was to take place on site, fuel was transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs were stored in this area. All relevant personnel were fully trained in the use of this equipment. Guidelines such as 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA C532, 2001) were referred to;
- Drip trays were used where hydrocarbons were being used for vehicle maintenance/refuelling;
- Toilets were provided at the contractor's compound for the duration of the works and all waste material was stored in a concrete holding tank and periodically removed from site and disposed of to an appropriately licensed facility;

- All plant was inspected at the beginning and end of each shift and if leaks were evident they were repaired immediately or removed from site and replaced; and
- Explosive materials and detonators were stored, transported, handled and used in the manner recommended by the manufacturer and in accordance with all statutory requirements or otherwise as advised by the Firearms and Explosives Unit of the Department of Justice and Equality (DOJE) and the Garda Síochána. It should be noted that these requirements were set out in a Method Statement which was agreed with the DOJE and the Garda Síochána in advance of the commencement of drilling and blasting works.

16.2.16 Water

No mitigation measures were deemed to be required to offset the impact on water quality during the dredging activities. Previous monitoring during these activities on Ros an Mhíl Harbour has indicated that there was no significant correlation between the dredging activity and the fluctuation in water quality.

The contractor ensured that no harmful materials were deposited into surface water, including sea, water courses, drainage ditches/pipes, on or adjacent to the site and they complied with the requirements of the Public Health Acts and Fisheries Acts. There was adherence to Guidelines for minimising impacts on water quality and fisheries in relation to construction including but not limited to, CIRIA C532 “Control of water pollution from construction sites – Guidance for consultants and contractors”, Inland Fisheries Ireland guidelines and TII Guidelines.

A number of mitigation measures were contained in the 2017 EIS and the subsequent Construction and Environmental Management Plan (CEMP) produced by the contractors (Ward and Burke) that would prevent any additional potential impact to water quality during the construction phase of the development. These included:

- Water was not allowed to escape directly from the construction works staging and storage areas and enter harbour waters. There was provision for suitable means of catching any escaped water to prevent unwanted materials/potential contaminants from entering the Harbour”;
- Where it was deemed necessary, there was provision for a temporary drainage system which was separate from any general site drainage;
- Suitable bunded chemical and fuel storage were provided;
- Spill kits and hydrocarbon adsorbent pack were located around the site;
- Refuelling of vehicles and machinery was undertaken in designated hard standing areas;
- Stockpile areas for materials were bunded to prevent surface water runoff into the harbour waters;
- Monitoring buoys were deployed to measure turbidity and dissolved oxygen and relay information to the onshore station. These were fitted with alarms to notify the Contractor and Harbour Master should the limits be exceeded;
- Concrete pouring was not undertaken during periods of heavy rainfall to prevent unnecessary runoff impacting water quality;
- Quick setting concrete mixes were used; and,
- Designated concrete washout pits in the form of watertight skips were used. These were located away from the water’s edge.

16.2.17 Marine

16.2.17.1 Pollution Control

There was potential for accidental spills or leaks of fuels, oils, or hydraulic fluids from construction equipment operating near or on the water. Such events, though unlikely if not managed properly, could have caused localised contamination and acute toxicity to marine organisms.

To mitigate these risks, best-practice construction environmental management was maintained. Key measures included bunded fuel storage, spill kits, and regular equipment checks to prevent hydrocarbon leaks and timing in-water works outside biologically sensitive periods, where possible. With these controls in place, the residual impact to marine ecology was predicted to be low, temporary, and localised.

16.2.17.2 Invasive (Marine) Alien Species Management

The construction works completed thus far at Ros an Mhíl present potential pathways for the introduction and spread of invasive alien species (IAS) in the marine environment. Marine infrastructure developments often act as vectors for IAS through increased vessel traffic, ballast water discharge, and the attachment of non-native organisms to construction materials, equipment, and vessel hulls (Minchin and Nunn, 2013). Submerged surfaces can also serve as new hard substrates for colonisation by opportunistic non-native fouling organisms, which may subsequently spread to surrounding natural habitats.

Species of concern in Irish coastal waters include *Didemnum vexillum* (carpet sea squirt), *Crepidula fornicata* (slipper limpet), and *Undaria pinnatifida* (wakame), all of which can outcompete native flora and fauna, alter benthic community structure, and impact commercial aquaculture and fisheries (BIM, 2023). The risk is heightened when construction involves equipment or materials transported from other regions, particularly from areas where IAS are already established.

To minimise the introduction and spread of IAS, a suite of biosecurity measures were implemented during the construction phase. These included cleaning and inspection of all marine plant, vessels, and construction equipment before deployment on site, sourcing materials such as rock fill from terrestrial, non-marine locations and avoiding material with prior aquatic exposure, ensuring that ballast water management practices comply with IMO Ballast Water Management Convention standards, and Development of a Biosecurity Risk Assessment.

16.2.17.3 Marine Mammal Mitigation

In accordance with the 'Guidance to Manage the Risk to Marine Mammals from Man-made Sounds Sources in Irish Waters' (NPWS, 2014), marine mammal mitigation guidelines were applied for drilling, blasting and dredging operations. An outline of these guidelines is presented below.

Dredging

- A 30-minute pre-watch prior to operations was undertaken.
- A WMO sea state four or less, 1km or more of visibility beyond the limits of the mitigation zone, and daylight, was required for the MMO to conduct a pre-watch.
- A mitigation zone of 500m radius from the sound source was implemented.
- Following the detection of a marine mammal within the mitigation zone during the pre-watch, a delay in commencement of operations was adhered to until at least 30 minutes elapsed since the animal was last detected in the mitigation zone.

- During any breaks in sound of >30 minutes, a full 30-minute pre-watch was conducted prior to recommencement of operations.

Drilling

- A 30-minute pre-watch prior to operations was undertaken.
- A WMO sea state four or less, 1km or more of visibility beyond the limits of the mitigation zone, and daylight, was required for the MMO to conduct a pre-watch.
- A mitigation zone of 500m radius from the sound source was implemented.
- Following the detection of a marine mammal within the mitigation zone during the pre-watch, a delay in commencement of operations was to be adhered to until at least 30 minutes elapsed since the animal was last detected in the mitigation zone.
- During any breaks in sound of >30 minutes, a full 30-minute pre-watch was conducted prior to recommencement of operations.

Blasting

- A 30-minute pre-watch prior to operations was undertaken.
- A WMO sea state four or less, 1km or more of visibility beyond the limits of the mitigation zone, and daylight, was required for the MMO to conduct a pre-watch.
- A mitigation zone of 1,000 radius from the sound source was implemented.
- Following the detection of a marine mammal within the mitigation zone during the pre-watch, a delay in commencement of operations was to be adhered to until at least 30 minutes elapsed since the animal was last detected in the mitigation zone.

16.2.18 Material Assets

A number of mitigation measures proposed in the 2017 EIS and included in the subsequent Construction and Environmental Management Plan (CEMP) produced by the contractors (Ward and Burke) were implemented during construction process and helped to prevent any potential impact to material assets during the construction phase of the development.

Construction works to date were also carried out in accordance with the Surface Water Management Plan (SWMP) which is part of the CEMP (see **rEIAR Volume III, Appendix 2B**).

For works in the vicinity of ESB infrastructure, works were carried out in ongoing consultation with ESB Networks and in compliance with requirements and guidelines including procedures to ensure safe working practices were implemented when working near live overhead/underground electrical lines.

Wastewater from welfare facilities on site was drained to integrated wastewater holding tanks associated with the toilet units. The stored effluent was then collected on a regular basis from site by a permitted waste contractor and removed to a licensed/permitted waste facility for treatment and disposal.

In terms of mitigation measures designed to prevent impacts from waste, prior to commencement of development, the Contractor prepared a Waste Management Plan/Resource Recovery Plan which set out segregation of all wastes (see **rEIAR Volume III, Appendix 9A**). The plan was prepared in accordance with the Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects published by the Department of the Environment, Community and Local Government in 2006.

Waste arising from activities during the construction period were managed by appropriately authorised waste contractors. Waste was segregated into construction wastes including recyclable, biodegradable and residual wastes and stored on site until they were removed by licenced waste disposal contractors.

In particular, the development contractor reduced waste generations by setting out the following measures, which were set out in the project CEMP also:

- Ordering the correct amount of materials to be delivered when needed,
- Ensuring materials are not delivered to site damaged and unusable;
- Reducing the amount of packaging used by suppliers,
- Where possible, establish a 'take back' system with suppliers,
- Ensuring wastes are handled and stored correctly, and;
- Limiting the amount of waste going to landfill by reusing and recycling where possible.

16.2.19 Air Quality and Climate

16.2.19.1 Dust and Air Quality

A Dust Minimisation Plan was implemented for the development works as construction activities were likely to generate some dust. The Plan included the following dust related mitigation measures:

- Site roads were regularly cleaned and maintained as appropriate. Hard surface roads were swept to remove mud and aggregate materials from their surface while any un-surfaced roads were restricted to essential site traffic only. Furthermore, any road that had the potential to give rise to fugitive dust was regularly watered, as appropriate, during dry and/or windy conditions;
- Skips were covered;
- Use of appropriately covered vehicles for transport of potential dust generating materials such as sand;
- Vehicles using site roads had their speeds restricted where there was a potential for dust generation;
- Public roads outside the site were regularly inspected for cleanliness and cleaned as necessary. Before entrance onto public roads, trucks were inspected to ensure no potential for dust emissions.
- Material handling systems and site stockpiling of materials were designed and laid out to minimise exposure to wind;
- The Dust Minimisation Plan was reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures.

16.2.19.2 Odour

The CEMP also included an Odour Management Plan to mitigate the potential for odours from the dredging of silt and clays. However, as the area dredged was limited to the quay wall and berthing pocket area, and that it was largely rock that was blasted and dredged, there was minimal risk of any odours occurring. The Odour management plan is more relevant to dredging of the approach channel and turning circle which did not take place during the development works.

16.2.19.3 Traffic Emissions

As described above the air quality effects from construction traffic are not considered to be significant. However, the following good practice mitigation was employed as part of the CEMP:

- Implementation of a Traffic Management Plan that was prepared in advance of the construction works and which formed part of the specification for the construction works. This outlined measures to minimise congestion and queuing, reduce distances of deliveries and eliminate unnecessary loads;
- Turning off vehicular engines when not in use. This restriction was strictly enforced unless the idle function was necessary for security or functionality reasons; and
- Regular maintenance of plant and equipment. Technical inspection of vehicles to ensure they performed the most efficiently.

16.2.19.4 Greenhouse Gas Emissions

The re-use of all of the dredged material minimised the use of high embedded energy materials during construction. This ensured that the release of greenhouse gases associated with the importing of fill material required for the reclamation, blasting platforms and protective berm was minimized.

As part of the Construction Environmental Management Plan, the Contractor was required to implement an Energy Management System for the duration of the works. As part of this process, the Contractor investigated opportunities for the use of energy-efficient machinery and recycled or low carbon construction materials.

Waste audits were undertaken that detailed resource recovery best practice and identified materials that could be reused and recycled. Materials were reused on-site within the areas where possible.

As much material as possible was sourced locally to reduce transport related CO₂ emissions.

16.2.20 Landscape and Visual Mitigations

The deep-water quay development cannot be readily screened from view, nor is this considered necessary in the context of the existing harbour complex. Instead, visual assimilation is considered more appropriate in this case. The rocky sides of the reclamation area and protective berm (including some rock armour) helps to blend the development in with the rocky coastline and the other existing developments in the area. The siting is inherent to the appraisal of landscape/seascape and visual effects herein and thus; consequently no additional mitigation was required in this instance.

16.3 Monitoring during the Previous Works

The contractor undertook the following monitoring during the previous works from January 2023 to May 2024:

16.3.1 Alien Invasive Plant Species (IAPS)

The occurrence of invasive species was monitored during the previous development works, in accordance with the construction-stage IAPS management plan. However, as this was a land reclamation project using rock and involving considerable compaction from moving vehicles, there was no vegetation on site, and the site remains cleared.

16.3.2 Turbidity Monitoring

A compact, durable and lightweight HydroLab MS5 probe containing a self-cleaning turbidity sensor, LDO dissolved oxygen sensor, a temperature sensor and a conductivity sensor was used to measure turbidity. The Probe was mounted on a moored Toroidal buoy (1350 mm in diameter) with galvanised steel/aluminium

superstructure with baffle light fitted with 2 No solar panels and battery box for housing system and battery which had a telemetry system to relay data to a shore location. Each fixed Probe relayed data on a half-hourly basis back to a terrestrial monitoring station located at Ros an Mhíl Harbour. The monitoring station included a data logging system with a real-time visual display of the transmitted data.

Two buoys were deployed at the project site from 14th March 2023 to 12th July 2024.

The results of the Turbidity Report can be found in **Volume III Appendix 7A** of this rEIAR. These results are assessed in **Volume II Chapter 7** Water of this rEIAR.

Table 16-2: Location of Data Buoy for Surface water monitoring.

Reference	Latitude	Longitude
Data Buoy 1	53.2631	-9.568614
Data Buoy 2	53.267281	-9.568247



Figure 16-1: Moored Buoy.



Figure 16-2: Buoy being deployed.

16.3.3 Vibration Monitoring

As part of the project requirements, a vibration monitoring protocol was described within the Construction Environment Management Plan developed by the contractor.

To meet these requirements, five vibration monitors were installed on site to monitor vibration, and an online portal was used to record vibration monitoring in real time on site (See **Table 16-3** and **Figure 16-3**). Trigger limits were set, and an email / text alert system was set up to notify team of any breaches in triggers. Once a limit was triggered, work was stopped, and control measures put in place to reduce or remove same.

Monthly vibration monitoring reports were prepared to identify any exceedances above nominal limit values and attempts to clarify the causes etc. No exceedances were recorded.

Table 16-3: Vibration Monitoring Details

Location Reference	Description	Instrument details
V1	Coast Guard Building	Ava Trace M80
V2	Storage Shed (cold store)	Ava Trace M80
V3	Lighthouse Signal building	Ava Trace M80
V4	House at Harbourt car park	Ava Trace M80
V5	Martello Tower	Ava Trace M80

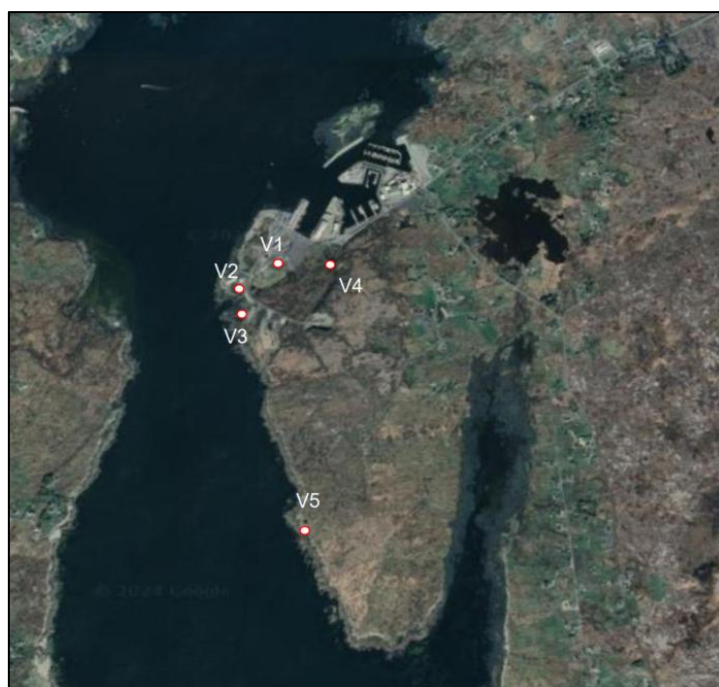


Figure 16-3: Map of Vibration monitoring locations.

As part of the project requirements, marine mammal observation works for drilling, blasting and dredging operations were undertaken by the contractor between 26th June 2023 and 20th May 2024. A team of dedicated, experienced Marine Mammal Observers (MMOs) were engaged to conduct marine mammal mitigation activities during drilling, blasting and dredging operations for the project. One dedicated, JNCC-certified Marine Mammal Observer (MMO) was present for drilling, blasting and dredging operations, respectively. The MMO conducted 30-minute visual pre-work watches during daylight hours for marine mammals prior to the operations, and the MMO observations were conducted on site from land. The operations were conducted in accordance with the Department of Arts, Heritage and the Gaeltacht (DAHG) 'Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters' (2014) which outlined industry best practice approach to mitigate against any possible disturbance to marine mammals. **Figure 16-4** shows the MMO locations.



Figure 16-4: Marine Mammal Observer locations.

An experienced and suitably qualified maritime archaeologist with underwater/maritime/marine dredging experience and licensed under the National Monuments Act 1930-2004 was engaged by the contractor and was retained for the duration of the relevant works to carry out such archaeological monitoring.

There were plans put on place in the event of archaeologically significant features or material being uncovered during the construction phase, machine work would cease in the immediate area to allow the archaeologist to inspect any such material; full archaeological recording of significant material would be in accordance with archaeological licence requirements and the Statutory Orders. Provision for secure temporary storage facilities were made in advance of the Works so as to immediately house any finds recovered during the archaeological monitoring.

16.4 Remedial Mitigation Measures

The works undertaken did not have and currently are not having significant environmental effects.

The only mitigation measures recommended to mitigate some of the not significant effects is to complete the proposed Deep Water Quay development.

Currently the development is not operational as all works ceased on the 20th of May 2024. Upon the suspension of works, all equipment, materials and temporary facilities were removed from the site, and the area was fenced off. The removal of material stockpiles, equipment and facilities avoids any potential negative effects on water quality from flooding were it to occur.

There is currently no utility connections associated with the development. There is no waste at the site associated with development works.

The flood risk to the development is coastal, from either tide surge events in isolation or tides in combination with wave climate. Based on the results of the FRA, the minimum level of the deep-water quay was recommended to be +6.7mCD (+3.8m OD Malin) to protect against the present day 200-year return period tidal flood level. The current level of the site is +5mCD. Consequently, the site is susceptible to occasional inundation during spring high tides and other extreme weather events. The clearing of the site has reduced the potential for any contamination of water if the vacant site were to experience a flood event in this period between previous construction works and works to be completed.

There is consequently no operation phase for the development and no additional effects on the marine environment and species are expected. No additional or remedial mitigation measures are required, except for the development to be completed.