Mid and East Antrim Sea Defence Works Outline Construction and Environmental Management Plan (CEMP)

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Abbreviations

ASSI	Area of Special Scientific Interest
BPM	Best Practicable Means
BNCR	Belfast and Northern Counties Railway
CEMP	Construction Environmental Management Plan
FRA	Flood Risk Assessment
HGV	Heavy Goods Vehicle
HRA	Habitats Regulations Assessment
HSEQ	Health, Safety, Environment, and Quality
INNS	Invasive Non-Native Species
JBA	JBA Consulting
PEA	Preliminary Ecological Appraisal
PPE	Personal Protective Equipment
RRV	Road-Rail Vehicle
RAMS	Risk Assessment Method Statement
SPA	Special Protection Area
SWMP	Site Waste Management Plan
UXO	Unexpected Ordinance
WFD	Water Framework Directive

1 Introduction

1.1 Background

This Outline Construction Environmental Management Plan (CEMP) has been prepared to support a planning application for Translink coastal defence works along sections of the operational railway line within Mid and East Antrim, extending across Belfast Lough and Larne Lough. The proposed works comprise the repair, upgrade and installation of rock armour revetments to protect vulnerable railway embankments from coastal erosion, wave action and structural instability. The proposed development includes multiple grouped sites (Sites 2–6, 10A–10E, 10G, 11A, 11A1, 11C, 12 and 13), which are being progressed as coordinated packages due to their shared coastal setting, similar engineering requirements and logical construction efficiencies, including shared access and compound provision.

The purpose of this Outline CEMP is to define the environmental management framework for the construction phase of the proposed development, identifying key environmental constraints and outlining the mitigation and control measures to be implemented. It establishes roles, responsibilities and procedures to ensure compliance with relevant environmental legislation and best practice, whilst protecting sensitive coastal, marine and community receptors along the rail corridor. It aims to ensure compliance with any relevant legislation, government and industry standards and planning policy.

This document provides an Outline CEMP that will be developed further by the appointed Principal Contractor and updated as a live document throughout the construction process. Conditions from the planning application and marine licences will be incorporated through future updates.

The CEMP provides information on roles and responsibilities for the management of environmental controls and establishes a framework for the detailed CEMP. Specific methodologies and procedures will be addressed in the detailed CEMP produced by the Principal Contractor prior to the works commencing.

This outline CEMP includes the following:

- Description of the site location.
- Description of the proposed scheme.
- Outline of the construction works.
- A description of the required environmental mitigation and control measures.

2 The Proposed Development and Site Context

2.1 Site Location

The planned Translink works for Sites 2–6, 10A–10E, 10G, 11A, 11A1, 11C, 12 and 13 are located along the exposed coastal margins of Belfast Lough and Larne Lough, generally following the rail corridor and adjacent embankments, as shown in Figure 1. These sites comprise discrete but closely spaced sections of shoreline where existing defences are degraded, including grassed embankments, poorly graded or displaced rock armour, and sections of undefended coast. Geographically, the sites are grouped into clusters reflecting their proximity and shared coastal characteristics, namely the Belfast Lough grouping (Sites 2–6) and the Larne Lough groupings (Sites 10A–10E, 10G, 11A, 11A1, 11C, 12 and 13). Works will often be delivered from shared compound areas. Overall, the locations are characterised by linear coastal infrastructure with intermittent existing defences requiring upgrade or replacement to maintain the integrity of the railway corridor.



Figure 1 Location

2.1.1 Site 2:

The location of Site 2 is shown in Figure 2. The proposed works involve installing a new 70 m rock armour revetment to replace the existing randomly placed rocks at the embankment toe. It will be constructed between Chainages 0–70, tying into the grass

embankment at the south-west end and the existing sloped concrete revetment at the north-east end.



Figure 2 Belfast Lough – Boney before Accommodation Crossing to Eden Hilt

2.1.2 Site 3:

The location of Site 3 is shown in Figure 2. The works include installing a new rock armour revetment to support and extend an existing structure that is being outflanked. This will be located between Chainages 380–390 and will connect into the grass embankment at the north-east end and the existing rock revetment at the south-west end.

2.1.3 Site 4C:

The location of Site 4C is shown in Figure 3. The proposed works at Site 4C involve constructing a new rock armour revetment across two sections (A and B) to address existing erosion and instability. Section A will replace approximately 18 m of loosely placed rock armour and 23 m of stone block revetment along a grassed embankment slope, tying into the existing grass embankment at the south-west end and existing rock armour at the north-east end. Section B will involve replacing around 20 m of scoured grassed embankment, connecting to existing rock armour on the western end and natural grassed embankment on the eastern end, thereby restoring and strengthening the overall shoreline protection.



Figure 3 Belfast Lough – South-West of Salt mines to Cloghan Point Oil Terminal

2.1.4 Site 5:

The location of Site 5 is shown in Figure 3. The works at Site 5 comprise the installation of a new rock armour revetment to replace approximately 50 m of existing loose rock armour that currently requires remedial attention. The enhanced revetment will be constructed between Chainages 0–50 (345328E, 389067N to 345353E, 389110N), tying into the existing grass embankment at the south-west end and existing rock armour at the north-east end, improving structural integrity and resilience of the embankment.

2.1.5 Site 6:

The location of Site 6 is shown in Figure 4. The works comprise the installation of a newly enhanced rock armour revetment to replace an approximately 10 m length of existing grassed embankment that currently ties into a sloped concrete revetment. The new revetment will be constructed between Chainages 0–5 (346651E, 390361N to 346647E, 390358N), tying into the existing grass embankment at the south-west end and the existing concrete and stone revetment at the north-east end.

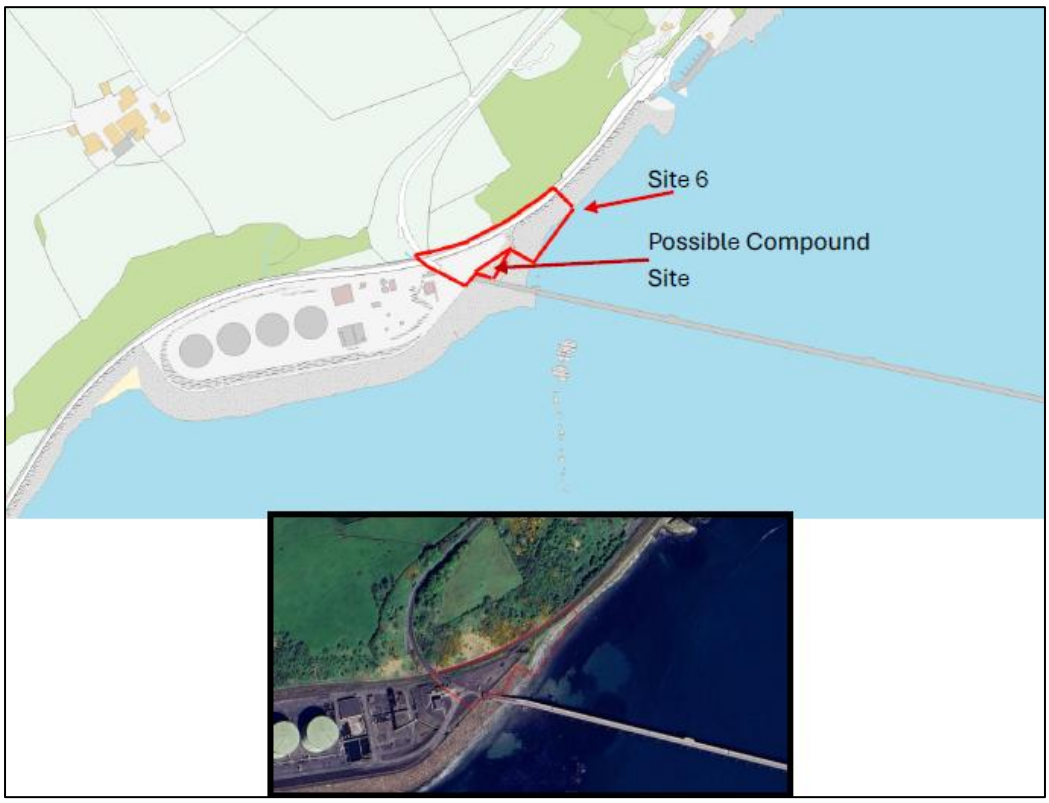


Figure 4 Belfast Lough – Southwest of Salt mines to Cloghan Point Oil Terminal

2.1.6 Site 10A:

The location of Site 10A is shown in Figure 5. Site 10A comprises two work areas (Sections A and B). Section A consists of approximately 80 m of undermined stone revetment with voids in the primary layer caused by insufficient rock size and poor placement, while Section B includes approximately 45 m of undermined stone revetment vulnerable to wave action. Both sections will be replaced with new rock armour revetment between Chainages 0–80, tying into the existing grass embankments at both ends.



Figure 5: Location of Sites 10A and 10B

2.1.7 Site 10B:

The location of Site 10B is shown in Figure 5. Site 10B includes two work areas (Sections A and B). Section A comprises approximately 20 m of undefended grassed embankment, while Section B comprises approximately 30 m of undefended grassed embankment,

including around 6 m of poorly placed rock armour requiring remedial works. These areas will be upgraded with new rock armour revetment between Chainages 0–20 and 75–100, and enhanced rock armour between 69–75, tying into existing embankments and revetments.

2.1.8 Site 10C1:

The location of Site 10C1 is shown in Figure 6. Site 10C1 consists of two work areas. Section A includes approximately 30 m of existing stone pitched revetment, while Section B comprises approximately 65 m of grassed embankment requiring remediation. New rock armour revetment will be installed between Chainages 250–280 (Section A) and 415–480 (Section B), tying into the existing embankment, grouted rock revetment, culvert, and adjacent revetments.



Figure 6 Location of Sites 10C1 and 10C2

2.1.9 Site 10C2:

The location of Site 10C2 is shown in Figure 6. Site 10C2 comprises approximately 10 m of existing rock armour exhibiting insufficient grading and poor interlock, as evidenced by dislodged units. This section will be replaced with new rock armour revetment between Chainages 30–40, tying into the existing embankment and culvert.

2.1.10 Site 10D:

The location of Site 10D is shown in Figure 7. Site 10D consists of approximately 263 m of rock armour revetment with randomly placed units and poor interlock, resulting in displacement of material. This will be upgraded with newly enhanced rock armour revetment between Chainages 25–288, tying into the existing grass embankment and culvert structures. The works will be delivered in three sections to accommodate two culverts.



Figure 7 Location of Site 10D

2.1.11 Site 10G:

The location of Site 10G is shown in Figure 8. Site 10G currently comprises a grass embankment with areas of rock armour, stone riprap, and pitched stone revetment. Identified defects include informal and inconsistent placement of riprap between Chainages 20–30, 80–90, and 130–140. Proposed upgrade works for this site are currently undefined.



Figure 8 Location of Site 10G

2.1.12 Site 11A1:

The location of Site 11A1 is shown in Figure 9. Site 11A1 comprises a combination of existing defences in varying condition, including approximately 5 m of poorly graded and randomly placed rock armour, a 25 m stone retaining wall in poor condition, and two stone pitched revetments requiring repair. The preferred option includes the installation of new rock armour revetment between Chainages 70–75, along with grouted stone patch repairs to the existing defences between Chainages 0–25 and 25–70.

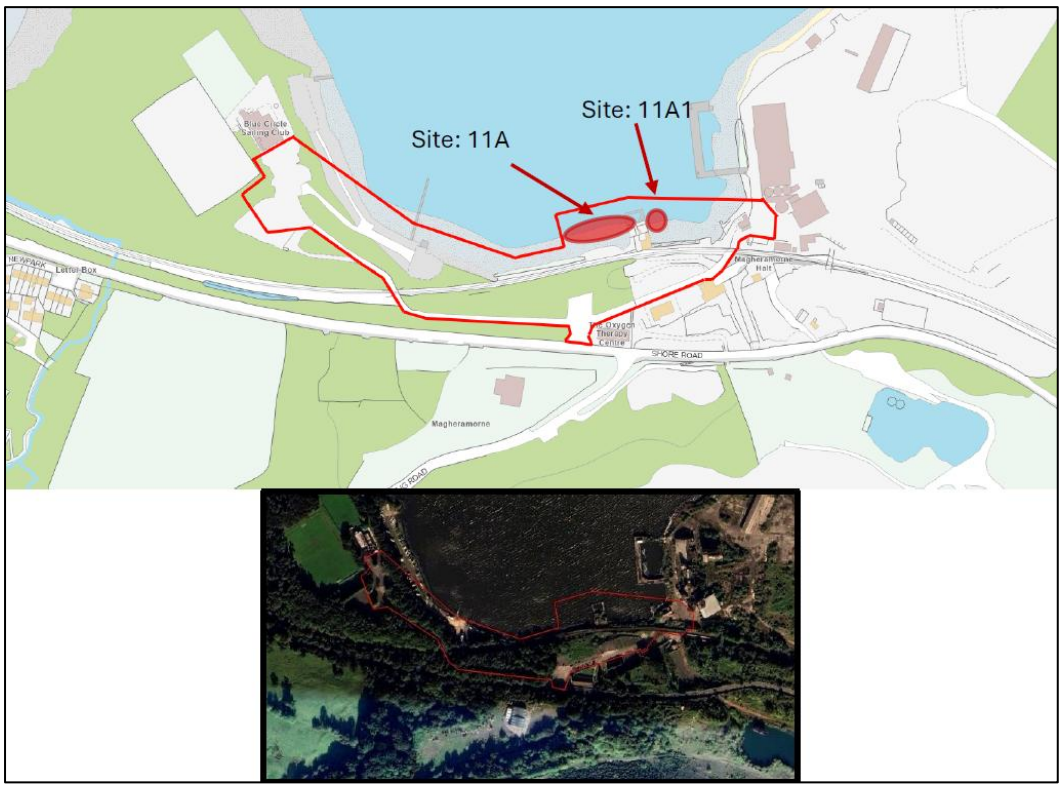


Figure 9: Larne Lough sites 11A and 11A1

2.1.13 Site 11A (Sections A and B):

The location of Site 11A is shown in Figure 9. Site 11A is divided into two sections. In Section A, the proposed revetment will tie into the existing retaining wall and concrete revetment toe at the eastern end and into the grouted stone revetment at the western end. Section B currently comprises approximately 5 m of stone pitching with minor block displacement and a large tree undermining the defence. This section will be upgraded with new rock armour revetment between Chainages 10–13 and newly enhanced rock armour revetment between Chainages 13–50.

2.1.14 Site 11C:

The location of Site 11C is shown in Figure 10. This site currently comprises approximately 270 m of grassed embankment with intermittent rock armour and stone pitching offering inadequate protection against the risk of wave action and associated erosion. The preferred option is a new rock armour revetment between Chainages 370-640. The revetment will tie into the existing rock armour revetment (south-east end) and grassed bank (north-west end).

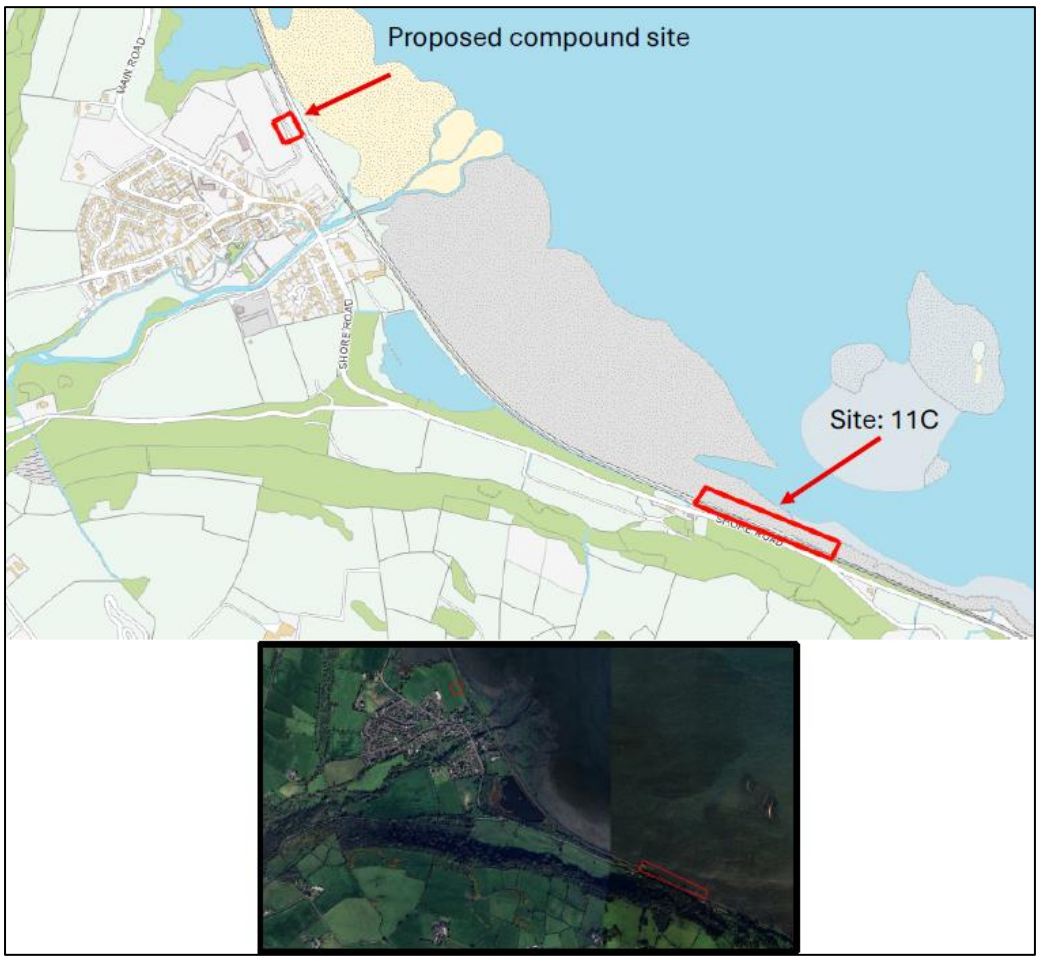


Figure 10: Larne Lough, Newpark to Glynn Station

2.1.15 Site 12:

The location of Site 12 is shown in Figure 11. The site comprises two distinct areas of concern. On the seaward side, there is an approximately 50–65 m length of undefended grassed embankment with no formal protection, leaving it vulnerable to erosion and scarring from high wave action and elevated water levels. On the landward (lagoon) side, a short section of rock and earth embankment adjacent to a culvert wingwall has experienced scour due to high water levels and increased flow velocities at the upstream end of the culvert.

Proposed works include the installation of a new rock armour revetment along the seaward side between Chainages 0–65, tying into the existing grass embankment at the south-east end and the existing rock armour revetment at the north-west end. On the landward side, a new riprap revetment will be constructed at Chainage 90, tying into the existing culvert structure at the eastern end and keyed into the existing grass embankment at the western end, with backfilling using smaller rock to reinstate the embankment profile.



Figure 11: Larne Lough, Glynn to Coalyard

2.1.16 Site 13:

The location of Site 13 is shown in Figure 12. The works will comprise a new rock armour revetment. The revetment is to be installed between Chainages 0-140 and tie into the existing grass embankment (south-east end) and rock revetment (north-west end). Currently, the 140 m long section of rock armour revetment requires remedial works. The existing rock armour (Chainages 0-140) was deemed to have been randomly placed and have a poor degree of interlocking as well as an insufficient rock grading compared to predicted storm events.

There is a risk of overall slope instability along the existing revetment and material washout which could result in serious structural damage and collapse if defence enhancement works are not undertaken.

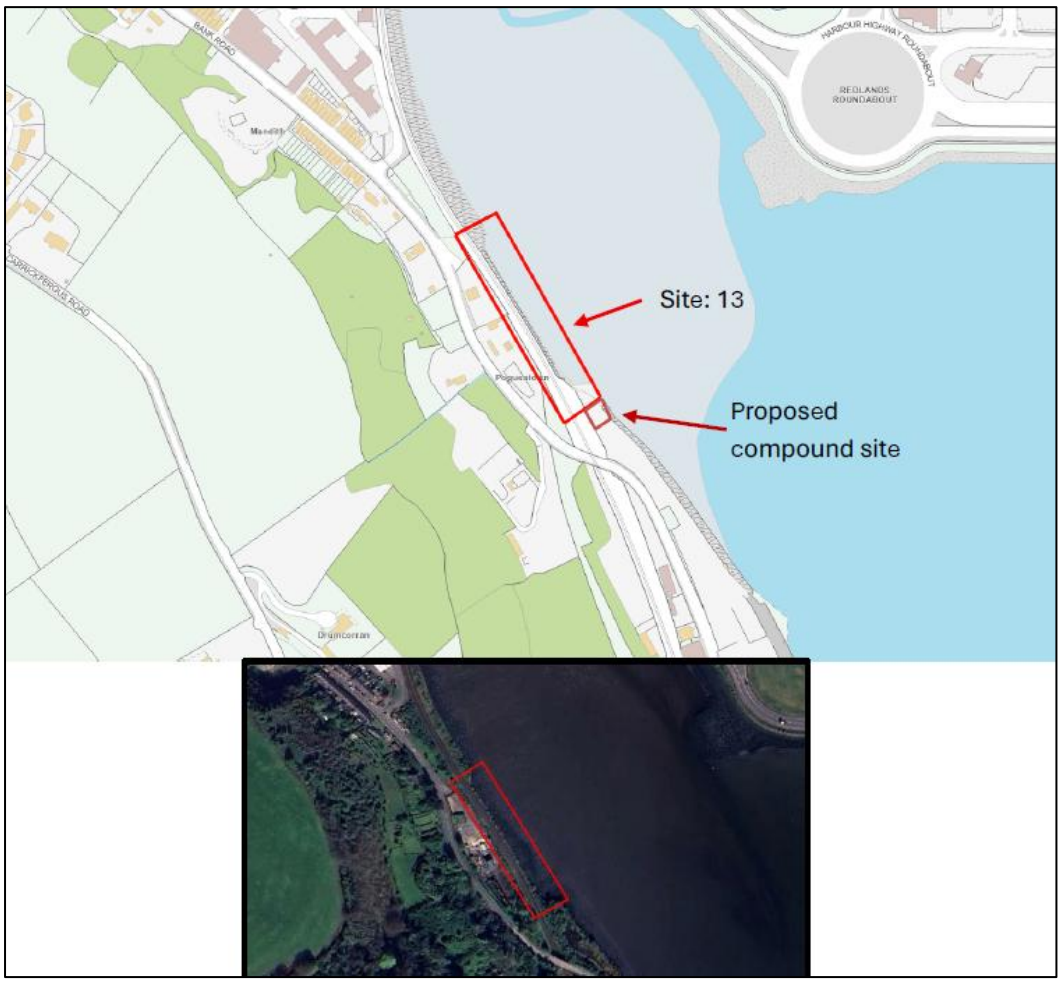


Figure 12: Larne Lough, Coalyard to Howden's Oil Depot

3 Construction Programme and Activities

3.1 Outline Construction Programme

Construction works for Site 2, 4C and 10D will commence in Spring 2027. Work on the remaining Sites will then follow on in a phased sequence comprising mobilisation, site establishment, main works, and demobilisation.

Overall, the construction and environmental programme will integrate rail constraints, tidal working windows, ecological protections, and safe access arrangements to ensure efficient delivery while minimising risk to operatives, the public and the surrounding environment.

Construction working hours will be determined by the available tidal windows. Delivery works to the site compound are to take place during daytime working hours. On Track works are likely to be completed during daytime and nigh-time hours.

3.2 Outline Construction Activities

A contractor has not yet been appointed for the works included in this Outline CEMP; therefore, outline construction activities have been assumed based on similar Translink projects completed elsewhere. Once a contractor has been appointed, a review of construction activities will be required.

The works comprise mobilisation to site, establishment of a temporary compound, and delivery and stockpiling of materials, followed by site clearance including vegetation clearance and removal of failed defences. Earthworks will involve regrading and profiling of the embankment slopes prior to installation of coastal protection measures, including geotextile layers, filter stone, and placement of new or enhanced rock armour revetments. Rock armour will be installed using excavators, starting with toe protection and progressing up the slope to the specified profile, ensuring interlocking placement and stability. Works will be undertaken under controlled railway possessions (T2/T3), with transport of materials via road and rail, and timed to coincide with low tide for shoreline activities. Demobilisation will include removal of plant, reinstatement of disturbed areas, and appropriate disposal of waste materials.

The construction works are programmed to be undertaken from Spring 2027, with a phased sequence comprising mobilisation, site establishment, main works, and demobilisation. Early activities will include site inspections, ecological checks (within 48 hours prior to works), permitting (including POWP and Permit to Dig), and establishment of the compound. Deliveries of plant, materials, and equipment will occur during daytime working hours, while rail-adjacent and on-track works will be undertaken during daytime and night-time hours. Construction activities such as embankment regrading and rock armour installation will be sequenced to align with tidal conditions, with toe works and geotextile placement programmed at low tide to ensure safe and effective installation.

The main construction phase will involve controlled transport of materials from the compound to work locations via road vehicles and rail-mounted vehicles, with typical

material movements planned within each shift and return cycles of approximately 90–110 minutes. Rock armour works will progress sequentially along each section, allowing completed sections to be used as working platforms and temporary storage areas. The programme incorporates daily shift briefings, monitoring of working hours (maximum 12-hour shifts) and coordination of plant and labour resources to manage fatigue and maintain productivity.

Access to the works will be via established points including Ballycarry Halt, Camerons UWC and the Magheramorne compound, with clearly defined limits within NIR boundaries. All access to the railway will be controlled through the Track Safety Controller, with entry only permitted under authorised possession.

3.2.1 Site Specific Access

Access to Sites 3–13 will be achieved via a combination of existing railway access points, local road networks and designated compound locations positioned to serve grouped work areas. Sites 3–6 (Belfast Lough) are located within close proximity (approximately 5 km extent) and are suitable for shared access arrangements and a common compound, enabling efficient movement of plant and materials along the corridor.

Sites within the Larne Lough area (Sites 10A–10G) will utilise access via established points such as Ballycarry, Magheramorne, and Camerons UWC, with a central compound and stockpile area serving all sub-sites due to their similar setting and close spacing. These locations allow both road delivery and rail-based access (where required), supporting the transport of materials to site and along the embankment.

Sites 11, 11A, 11A1, 12, and 13 will also be accessed via local road connections and rail access points along the Larne Lough corridor, with proposed shared compound areas located near the works to minimise travel distances and site disturbance. Grouping of these sites enables coordinated logistics, reducing the number of access points and optimising plant movements.

Across all sites, access will be controlled and coordinated to minimise disruption, with defined entry points, temporary compounds, and material stockpile areas supporting construction activities. The overall strategy prioritises shared access corridors, efficient logistics, and reduced environmental and public impact.

3.2.2 Compound Sites and Traffic Management

Temporary compounds will be secured using Heras fencing, lockable gates, and designated zones for welfare, plant storage, and material stockpiling. Within compounds and work areas, traffic management measures will include segregation of pedestrians and plant, use of banksmen for all vehicle movements (particularly reversing operations), and a strict site speed limit of 5 mph.

Traffic and transport management will ensure that all deliveries are coordinated through the site management team, with vehicles queuing at access points until instructed to enter site and escorted as required. Material stockpiles will be positioned at least 3 m from the

running rail and limited in height to maintain safety and stability. Parking on the public highway will be controlled to avoid obstruction of access, sightlines, or emergency routes, and all personnel will be required to park considerately in designated areas. Measures will also be implemented to minimise disruption to the public, including controlled access points, limited interaction, and clear communication with stakeholders.

3.2.3 Indicative Construction Plant

Key construction plant likely to be used during the works is as follows:

- Excavator/long-reach excavator.
- Telehandler.
- Road-Rail Vehicle (RRV) with trailer.
- Safety boat.
- Vibrating plate compactor.
- Welfare vehicle.
- Heavy Goods Vehicle (HGV) deliveries to compounds.

3.2.4 Indicative Materials

Materials likely to be used during the works are as follows:

- Geofabrics HPS4 Coastal.
- LMA 30/600 Armour Stone.
- Type 3 Granular Fill.
- Railway Ballast.
- Diesel/Oil/Petrol.
- Silt Fence.
- Stainless Steel Fixing Pins.
- Terram.

3.2.5 Indicative Working Hours

Likely working hours are as follows:

- Daytime compound activity.
- Night-time possession working (potential possession windows approximately 22:00-06:00).
- Extended blockade periods where required.

4 Environmental Management and Mitigation Measures

4.1 Introduction

This CEMP is currently an outline document, which will be adopted by the appointed Principal Contractor prior to commencement of the works and further developed once further detail of construction methodologies and timescales is available. Along with published guidance documents, the CEMP outlines specific practices and policies which have been identified as relevant for the proposed development.

Potential environmental impacts and effects have been identified through several environmental assessment reports produced to support the planning application and marine licence applications for the proposed development. This includes a Water Framework Directive (WFD) Assessment, Flood Risk Assessment, Preliminary Ecological Appraisal (PEA), Heritage Baseline and a Contaminated Land Desk Study. A range of 'standard' or best practice mitigation and construction management measures were accounted for in the environmental assessment reports and will be implemented during construction of the proposed development through adherence to the CEMP.

This outline CEMP provides the likely structure of the detailed CEMP. The detailed CEMP will be produced in line with this outline CEMP following the receipt of planning permission from Mid and East Antrim District Council, and will detail any relevant planning conditions, environmental management measures and further information available. It will also incorporate any conditions as a result of the marine licensing process.

The Principal Contractor will also be responsible for working in accordance with the CEMP.

The following sections of this outline CEMP describe the general mitigation and management measures to be included in the CEMP as a minimum to ensure the protection of the environment from potential adverse effects from the proposed development.

4.2 Noise and Vibration

Due to the nature of the activities and construction works, it is likely that temporary increases in noise and vibration will be experienced in the area immediately surrounding the site. It is possible that surrounding receptors will experience audible, but intermittent, noise from activities on the site including heavy goods vehicle movements and the movement of rock. However, this shall be considered against the existing baseline noise influenced by industrial activities along the railway line.

To ensure the impacts are minimised, best practicable means (BPM) will be applied during construction works to minimise noise and vibration at sensitive receptors. BPM are defined in Section 52-(1) of the Pollution Control and Local Government (Northern Ireland) Order 1978.

The following measures will be put in place by the Site Manager and monitored by the Environment Manager to minimise noise and vibration during construction:

- Machinery and equipment will be regularly inspected to ensure it is within normal working order and meets manufacturers standards.
- Any associated noise attenuation measures such as exhaust silencers shall remain always fitted.
- Work will be carried out during the agreed working hours.
- Plant and machinery will be turned off when not in use.
- Construction staff will be informed about the need to minimise noise as well as about the health hazards of exposure to excessive noise.
- Construction staff will not use loud equipment for an unnecessary period of time.
- Prior to particularly loud period of work starting notice will be given to neighbouring residents and business owners and contact details of the Principal Contractor will be provided.
- There will be a recording process for any noise complaints and reporting to the Principal Contractor for immediate investigation.

4.3 Air Quality and Dust

Air quality is expected to be impacted during the construction phase with the generation of fumes from machinery, as well as airborne dust particles. The Principal Contractor will control and limit dust, air quality, odour and exhaust emissions during the construction works as far as reasonably practicable. The following mitigation measures shall be implemented by the Site Manager and monitored by the Environment Manager:

- Machinery and equipment will be regularly inspected to ensure it is within normal working order and meets manufacturers standards.
- Machinery and equipment will not be used unnecessarily or outside of agreed working hours.
- Ensure all vehicles switch off engines when stationary; no vehicle idling will be permitted.
- Dust suppression measures will be put in place especially during extended periods of dry weather.

4.4 Landscape and Visual Amenity

Measures set out in this section will be implemented by the Site Manager and monitored by the Environment Manager.

The Landscape and Visual Impact Assessment states there shall be a primary focus on embedding mitigation in the design by locating works within or immediately adjacent to the existing railway and coastal defence corridor wherever practicable, avoiding unnecessary land take, avoiding loss of established vegetation and boundary screening, avoiding unnecessary lighting and avoiding construction compounds or access arrangements that

would introduce prominent temporary features into sensitive views. Secondary mitigation shall reduce remaining effects through sensitive construction management where required.

Construction lighting could adversely affect nearby visual receptors if construction work is carried out during hours of darkness, particularly where lighting is directed towards residential properties, open space, the shoreline or lough-facing views. Where temporary construction lighting is required, it shall be in line with section 4.11.

Compounds and laydown areas shall be located away from visually sensitive locations and within existing disturbed areas, in line with the following measures:

- Site compounds will be located within existing railway industrial harbour or previously modified land where practicable.
- Sensitive open views shall be avoided.
- Prominent temporary features shall be avoided in views from nearby receptors.

Regarding vegetation, the following will be followed in order from top to bottom:

- Avoid loss of established vegetation and screening.
- Minimising vegetation removal where total avoidance is not possible.
- Replace or reinstating vegetation where removal is unavoidable.

4.5 Biodiversity, Flora and Fauna

Measures set out in this section will be implemented by the Site Manager and monitored by the Environment Manager.

An investigation into the baseline of the surrounding ecology as part of the PEA identified that there were potentially vulnerable receptors that the proposed development will consider mitigation for, namely:

- Belfast Lough Special Protection Area (SPA) Ramsar and Area of Special Scientific Interest (ASSI).
- Larne Lough SPA Ramsar and ASSI.
- Priority Habitats (e.g., saltmarsh and intertidal habitats).
- Priority flora (e.g., egg wrack and wood vetch) and fauna (e.g., otters and birds).

The extent of the Belfast Lough and Larne Lough European Designated Sites are shown in Figure 13 and Figure 14.



Figure 13 Extent of the Belfast Lough SPA (green) and Ramsar/ASSI (red)



Figure 14 Extent of the Larne Lough SPA, Ramsar and ASSI (red)

The Principal Contractor will ensure that all activities associated with the construction that may have a negative impact on ecology (i.e., through direct impacts on habitats or species, or through exposure to waste (see section 4.10), pollutants (see section 4.7), dust (see section 4.3), and noise (see section 4.2)) will be monitored and appropriate mitigation measures implemented to reduce the impact to acceptable levels.

The following general measures will be followed:

- The Principal Contractor will be responsible for ensuring all necessary permits, licences or consents required are applied for and in place prior to works commencing.
- All personnel to receive a site environmental induction before commencing work.
- Toolbox talks to be carried out for specific ecological sensitivities for the individual site.
- Ecological constraints plans will be made available and displayed on site.
- If an unexpected protected species is identified on site work will stop and the advice of a named ecologist will be sought.
- Vegetation clearance shall be avoided where possible. Where it is required, it will be completed outside of bird nesting season (mid-February to September).
- Hours of working will be during daylight hours where possible to limit disturbance to nocturnal and crepuscular animals. Where lighting is required, it will follow the measures set out in section 4.11.
- Waste management processes will be followed (see section 4.10 for further details).
- Pollution prevention measures will be followed to reduce the risk of pollution events (see section 4.7 for further details).
- Dust monitoring and suppression measures will be followed where required (see section 4.3 for further details).
- Noise monitoring and mitigation will be followed (see section 4.2 for further details).

To prevent the spread of Invasive and Non-Native Species (INNS), the following measures will be followed:

- A pre-construction check of the site in areas where INNS are potentially present.
- Training during induction for all site personnel on the identification and location of INNS within the site and adjacent areas as well as biosecurity measures and legal requirements/obligations.
- Measures will be put in place to ensure that there is no spread of INNS. The Check-Clean-Dry approach will be followed ensuring that all Personal Protective Equipment (PPE) and plant and equipment is cleaned before entering and leaving site.
- Cleaning areas will be designated at all site egress points for plant and machinery. The cleaning area will be covered in a heavy-duty impermeable sheet. All PPE machinery and tools used to carry out the works will be cleaned thoroughly with stiff-haired brushes.
- Boot washes will be set up at all entry and exit points to the work site.
- In the event of INNS being newly recorded within the works or access footprints, invasive species (including INNS associated with Intertidal habitats) will be demarcated and signage erected to ensure no accidental intrusion – exclusion zone to be a minimum of 7 m. No tools or materials will be stored on top of or within 10 m of areas of INNS.

The proposed works constitute a wider scheme to complete remedial works for coastal assets in Northern Ireland. The proposed development involves undertaking works at 26 coastal and estuarine flood defences, with four of these sites comprising minor patch repairs. The construction methodology is subject to change; however, to meet project delivery schedules, parallel working between sites may occur.

As the proposed development is located adjacent to the Belfast Lough and Larne Lough European Designated Sites, impacts have been assessed through Habitats Regulations Assessments (HRAs). There is potential for in-combination effects if construction is occurring simultaneously; therefore, these sites shall be built out sequentially to avoid cumulative effects on the European Designated Sites.

As well as pollution prevention measures (see section 4.7 for further details) and measures to restrict lighting at night (see section 4.11 for further details), the HRAs also include the following pre-works control measure:

- A pre-works check will be completed as close to the construction works starting as possible to identify any new potential Otter holts or resting areas within the site area. Prior to works commencing each day the works area and immediate vicinity will be checked for Otter by a qualified ecologist. Should an Otter be encountered on site during the works all works will cease immediately and advice be obtained from an experienced ecologist.

Due to the proximity of the proposed development to European Designated Sites, it is paramount that any construction works and compounds are contained entirely within the established footprint as set out by the red line boundary used within the HRAs. Any areas outside of this have not been assessed and may cause impacts to the European Designated Sites that have not been accounted for.

4.6 Historic Environment

Measures set out in this section will be implemented by the Site Manager and monitored by the Environment Manager.

A Heritage Baseline Assessment has been undertaken for the Translink Sea Defences scheme. The assessment identified that the majority of proposed works comprise installation or repair of coastal defence structures within areas that have been subject to historic coastal erosion, land reclamation, railway construction, industrial activity and previous maintenance works. Consequently, the potential for encountering significant buried archaeological remains is considered to be generally low.

Heritage assets, including Scheduled Monuments, Listed Buildings, Conservation Areas, industrial heritage features and former Belfast and Northern Counties Railway (BNCR) infrastructure, are located within the wider vicinity of several Sites. Maps show the location of heritage assets can be found in the Heritage Baseline Assessment (TSD-JBAI-XX-XX-RP-HE-0001-S3-P04_Heritage_Baseline_Assessment_Mid_East_Antrim). The following measures should be put in place:

- Construction activities shall be undertaken in a manner that avoids unnecessary damage to or impacts upon known heritage assets and their settings.
- All personnel shall receive a site induction and toolbox talk covering archaeological and cultural heritage constraints including the identification of potential archaeological material and the procedures to be followed in the event of an archaeological discovery.
- No plant, materials, fuel storage, welfare facilities, parking areas or construction activities shall be located within designated heritage assets unless specifically approved by the relevant authorities and Translink.
- Construction compounds access routes and material storage areas shall remain within the agreed working footprint and shall avoid encroachment into areas associated with identified heritage assets.
- Particular care shall be exercised to avoid damage in locations where heritage assets lie close to the works including:
    - The scheduled searchlight emplacements associated with Kilroot Battery (ANT053:017 and ANT053:018) Sites Assets 4C and 5.
    - The Scheduled Monument "Moated Site and Rectangular Structure" (ANT047:001) near Sites 10C1 and 10C2.
    - White Harbour (HB22/06/008) and associated historic harbour infrastructure near Site 6.
    - Historic railway infrastructure including mileposts, stations, bridges and other surviving BNCR features adjacent to several asset locations.
- Existing historic railway infrastructure that remains in situ shall not be disturbed during the works. Any accidental damage to heritage features such as historic mileposts railway furniture masonry structures harbour infrastructure or other historic fabric shall be reported immediately to the Site Manager and Translink Representative.
- Where temporary construction activities are undertaken in proximity to designated heritage assets care shall be taken to minimise visual intrusion unnecessary lighting vibration and accidental damage.
- Ground disturbance shall be restricted to the minimum area required to complete the works. Excavation depths shall be limited to those identified within the design and method statements.

4.6.1 Unexpected Archaeological Discoveries (Watching Brief / Chance Find Procedure)

Although archaeological potential is considered low, previously unknown archaeological remains may survive within areas affected by coastal deposits, reclaimed land, former shoreline environments or historic industrial activity.

Should archaeological remains, structures, artefacts, deposits, ship timbers, buried foundations, human remains or any object of potential archaeological significance be encountered during the works:

- All works within the immediate vicinity shall cease immediately.

- The find shall be protected from damage and disturbance.
- The Site Manager shall be informed immediately.
- The location shall be temporarily fenced or otherwise secured.
- Photographic records shall be made where safe to do so.
- Translink and the Environment Manager shall be notified.
- Advice shall be sought from Historic Environment Division and an appropriately qualified archaeologist before works recommence.

No archaeological object or material shall be removed from the site unless authorised by the relevant statutory authority and a suitably qualified archaeologist.

In accordance with the Historic Monuments and Archaeological Objects (NI) Order 1995, archaeological objects discovered during the works shall be reported to the relevant authorities.

A record of all archaeological discoveries, heritage-related incidents and communications with statutory consultees shall be maintained within the site environmental records.

4.6.2 Human Remains

If human remains, cremation deposits or suspected burial features are encountered:

- All works in the area shall stop immediately.
- The remains shall not be handled moved or disturbed.
- The area shall be secured to prevent unauthorised access.
- The Police Service of Northern Ireland, Translink and Historic Environment Division shall be notified immediately.
- Works shall not recommence until written instruction or approval is received from the relevant authorities.

Sites 2, 3, 4C, 5 and 6 (Boneybefore to Cloghan Point Oil Terminal)

- Avoid all works plant movement and material storage within Scheduled Monument boundaries associated with the World War One Searchlight Emplacements (ANT053:017 and ANT053:018) .
- Route construction access away from the Searchlight Emplacements wherever practicable .
- Install temporary protective fencing around Scheduled Monuments before construction begins .
- Erect heritage awareness signage identifying protected monuments .
- Deliver toolbox talks to all site personnel on heritage constraints and legal protection requirements .
- Prohibit vehicle movement parking and material storage within Scheduled Monument areas .
- Retain materials and finishes consistent with existing rock armour and coastal defences to avoid effects on the setting of nearby heritage assets .

- Protect nearby railway heritage features including mileposts from accidental damage.

Site 10 (Ballycarry Station to Magheramourne Station)

- Protect the Scheduled Monument 'Moated Site and Rectangular Structure' (ANT047:001) from accidental damage during works .
- Locate access routes away from the Scheduled Monument where practicable .
- Prevent storage of materials plant parking or construction activities within protected heritage areas.
- Protect BNCR railway heritage assets and associated mileposts during construction.
- Use replacement rock armour and finishes that are sympathetic to existing coastal defence materials .

Sites 11A1, 11A and 11C (Magheramourne Station Area)

- Protect nearby railway heritage features including mileposts from accidental damage.
- Design access routes to avoid heritage assets wherever possible.
- Maintain good construction practice to minimise noise visual intrusion and disturbance affecting heritage settings.

Site 12 (Glynn / Lorne Rugby Club Area)

- Undertake archaeological monitoring of all groundworks associated with the proposed works compound. Monitoring should be undertaken by a suitable archaeologist.
- Monitor and record any remains associated with the post-medieval field system (ANT040:120) and Mesolithic occupation site (ANT040:054).
- Ensure archaeological recording of any features deposits or artefacts exposed during works.
- Obtain the necessary archaeological licence under the Historic Monuments and Archaeological Objects (NI) Order 1995 before any archaeological excavation or investigation.
- Cease work and inform the archaeological clerk of works if previously unknown archaeological remains are encountered.

Site 13 (Bank Road)

- Protect nearby BNCR-related mileposts and railway heritage assets from accidental damage.
- Position plant materials and access routes to avoid unnecessary impacts on heritage assets.
- Use sympathetic materials and finishes consistent with surrounding railway and coastal infrastructure.

4.7 Water Resources and Pollution Prevention

4.7.1 General Mitigation

The Principal Contractor will take precautions during construction activities to protect the local drainage system, nearby watercourses, and groundwater from pollution. Silt prevention measures will be put in place to prevent disturbed silt entering the watercourse. All excavations will be undertaken at low tide and all rock will be placed at low tide to mitigate sediment plumes. All work in the sediment area will be within the tidal working windows only.

Accidental pollution events during the construction phase have the potential to impact WFD sensitive habitats present within and in close proximity to the proposed development. Pollution prevention measures will be strictly adhered to during the works. Pollution prevention measures will be implemented by the Site Manager and monitored by the Environment Manager. These will include, but are not limited to:

- Management of unexpected contamination procedures to be in place.
- Site personnel will receive training in pollution incident response and environmental protection procedures.
- Abiding by industry standard pollution prevention guidelines such as those given in CIRIA Guidance: Control of water pollution from construction sites. Guidance for consultants and contractors (C532D).
- A designated refuelling area will be established within the main compound on an impermeable surface and away from any watercourse or drainage (at least 10 m). Drip trays will also be placed underneath standing machinery to prevent pollution by oil/fuel leaks.
- Any chemical fuel and oil stores will be located on impervious bases within a secured bund with a storage capacity 110% of the stored volume.
- Biodegradable oils and fuels will be used where possible.
- Emergency spill kits will be available on site and staff trained in their use.
- Daily checks of vehicles and machinery will be carried out by the Principal Contractor and records kept on a weekly basis and any items that have been repaired/replaced/rejected noted and recorded. Any items of plant machinery found to have been defective shall be removed from site immediately or positioned in a place safely until such time that it can be removed.
- Designated wheel-washing areas will be established to minimise the transfer of sediment and contaminants.
- Dust suppression measures and appropriate stockpile management practices will be implemented to reduce the potential for airborne contamination and sediment runoff.
- Removal of any material accidentally contaminated during the works by potentially polluting substances such as fuels and oils from site to an appropriate licenced facility for disposal.

- Silt curtains or other appropriate method of silt containment will be used to prevent silt from the construction works entering the watercourse.
- Prevention of direct discharges to watercourses groundwater or marine environments.
- Use of temporary drainage settlement tanks or treatment systems where necessary.

Additional measures set out in the WFD assessment are as follows:

- Undertake sediment contamination testing where required (metals hydrocarbons PFAS).
- Minimise release of fine sediments.
- Complete excavations and reinstatement within the same tidal window where possible.
- Avoid stockpiling spoil within the tidal zone.
- Monitor sediment plumes and water quality during construction.

4.7.2 Site Specific Mitigation

Site 2 and 4C lie within the Belfast Hills-Island Magee Groundwater Drinking Water Protected Area (DWPA) and Site 2 overlies highly vulnerable Raised Beach Deposits (Class 4e vulnerability). Protection measures to avoid contamination of the highly vulnerable groundwater source must include:

- Avoiding creation of new contaminant migration pathways.
- Careful management of excavations and drainage.
- Temporary dewatering controls if required.
- Use of settlement ponds and appropriate treatment prior to discharge.

4.8 Flood Risk

Flood risks to consider at the site are primarily from fluvial flooding due to the proximity of the site to the river and tidal flood risk is high. Surface water flooding is unlikely to occur directly to the site; however, the risk from surface water flooding is considered as medium-high and can impact on the safe exit for site occupants. Surface water management is therefore necessary to avoid any water quality pollution from ongoing construction activities at the site.

Construction methods are also unlikely to increase the risk of wave overtopping, however, mitigation measures will be implemented, where applicable, to protect the water environment and surface water quality during all construction activities. This will include:

- The rock revetments will be constructed using permeable rock which allows for the free flow of sea and surface water through it preventing accumulation.
- Temporary construction compounds and construction equipment shall not be in places that could block the current drainage infrastructure in case of surface runoff from wave overtopping.

- Site managers shall be aware of relevant flood warnings and are signed up to relevant weather warnings.
- Site staff are made aware of any flood alerts and warnings prior to attending any work being undertaken on site.
- A flood response plan will be developed for the start of construction which will detail an evacuation plan for people, equipment and compounds.

4.9 Ground Conditions, Contamination and Hazardous Material

Measures set out in this section will be implemented by the Site Manager and monitored by the Environment Manager.

The objective of this section is to manage risks associated with existing land contamination and contamination encountered during the construction works and to prevent adverse effects on:

- Construction workers and site visitors.
- Members of the public.
- Surface water and groundwater resources.
- Ecological receptors.
- Adjacent land users.
- The wider environment.

The works are located within a corridor containing existing railway infrastructure, areas of Made Ground, historical industrial land uses and sensitive water and ecological receptors. Appropriate controls are therefore required to ensure that contamination is not disturbed, mobilised or released during construction activities.

4.9.1 General Requirements

All works shall be undertaken in accordance with:

- Construction (Design and Management) Regulations (Northern Ireland) 2016.
- Relevant pollution prevention guidance.
- Applicable waste legislation.
- Approved project environmental management procedures.

All personnel shall receive environmental awareness training and site induction prior to commencing work.

4.9.2 Protection of Construction Workers

Where excavation, earthworks or intrusive activities are undertaken:

- Appropriate PPE shall be worn at all times.
- Good site hygiene practices shall be maintained.
- Welfare facilities shall be provided.
- Eating, drinking and smoking shall only take place within designated welfare areas.

- Dust generation shall be minimised through damping down where required.
- Contamination awareness briefings shall be provided to site personnel.

Where asbestos-containing materials are suspected, works shall cease immediately and specialist advice shall be sought.

4.9.3 Excavated Materials Management

Excavated materials shall be managed in accordance with section 4.10.

4.9.4 Groundwater and Surface Water Protection

Measures shall be implemented to prevent the migration of contaminants into groundwater, watercourses and coastal waters. These shall be in line with the measures set out in section 4.7.

Particular care shall be taken where works are undertaken adjacent to Belfast Lough, Larne Lough, watercourse crossings or areas underlain by sensitive aquifers.

4.9.5 Dewatering Activities

Where temporary dewatering is required:

- Dewatering activities will be planned and supervised by competent personnel.
- Extracted water will be inspected for evidence of contamination.
- Settlement tanks and treatment systems will be utilised where necessary.
- Discharges will only occur where permitted and authorised.
- Dewatering activities will comply with CIRIA C750 Groundwater Control guidance.

4.9.6 Unexpected Contamination

If contamination is encountered during construction activities, including:

- Discoloured soils.
- Hydrocarbon odours.
- Oily residues.
- Asbestos-containing materials.
- Buried tanks.
- Drums or containers.
- Unexpected wastes.
- Contaminated groundwater.

the following procedure will be implemented:

- Stop work immediately within the affected area.
- Establish an exclusion zone if required.
- Notify the Site Manager and Environment Manager.
- Undertake a specialist assessment.

- Arrange sampling and testing where necessary.
- Determine appropriate remedial or disposal measures.
- Obtain any required approvals before recommencing works.

All incidents will be recorded within project environmental records.

All construction workers will be made aware of any potential contamination issues on site and will use best practice techniques during all activities.

The handling, use and storage of hazardous materials will be undertaken following the outlined measures:

- The construction works will be carried out with the least feasible disturbance of soils thereby minimising the amount of excavated material. The inert excavated material will be reused within the proposed development wherever possible.
- Where applicable design measures will be put forward to minimise the excavation of soil that cannot be reused due to their mechanical properties or contamination.
- Should there be any non-hazardous waste exceeding inert Waste Acceptance Criteria then this will be sent to a licensed non-hazardous landfill for disposal / recovery.
- Should there be a requirement for any of the Made Ground to be exported from the site it is recommended that suitable laboratory sampling is carried out to appropriately classify the material for disposal.
- Construction personnel will be required to wear appropriate PPE and carry out protective measures when handling hazardous waste.
- All associated hazardous waste residuals will be stored within temporary bunded storage areas prior to removal by an appropriate management contractor for off-site treatment / recycling / disposal.
- If unexpected ground conditions are encountered during the construction works (e.g. odours or staining indicating contamination) then works will stop and further assessment shall be carried out.

4.9.7 Site Specific Considerations

Site 4C

The Desk Study has identified that Site 4C specifically identified a potential Unexploded Ordnance (UXO) risk associated with historic military activities. As a result, the following measures must be taken accordingly:

- UXO risk will be assessed prior to intrusive works.
- Appropriate specialist advice and procedures will be implemented during excavation works.
- The risk will be managed through the project's health and safety arrangements.

4.10 Waste Management

Measures set out in this section will be implemented by the Site Manager and monitored by the Environment Manager.

The waste stream arising from the construction works required for the proposed development will be considered and managed in accordance with the waste hierarchy. Including waste minimisation and use of recycled materials will be considered through the design development and construction approach. As such, the rocks from the existing revetment will be reused where possible.

Due to the nature of the construction works, very little waste is expected to be generated. However, should the timber breastwork be deemed unsuitable then it will be removed and disposed of by a licenced waste carrier.

The existing geotextile will be collected and disposed of by a licenced waste carrier.

Along with the detailed CEMP, a Site Waste Management Plan (SWMP) will be produced prior to works commencing.

Excavated materials will be managed in accordance with a Materials Management Plan and SWMP. The following controls will apply:

- Excavated soils will be visually inspected during excavation.
- Materials suitable for reuse will remain on site where practicable.
- Imported materials will be verified as suitable for their intended use.
- Soil stockpiles will be located away from drains watercourses and flood-prone areas.
- Stockpiles will be appropriately covered or stabilised where required to prevent dust generation and runoff.
- Vehicle movements will be managed to minimise tracking of contaminated materials around the site.

The Principal Contractor will ensure that no harm comes to wildlife by maintaining the site efficiently and clearing away materials which are not in use, such as wire or bags in which animals can become entangled.

All litter and waste generated during the works will be collected, bagged, and removed from site for appropriate disposal.

4.11 Lighting

Hours of working will be limited to daylight hours where possible, to limit disturbance to flora and nearby residential receptors. Where working is unavoidable outside daylight hours, temporary construction lighting will be:

- Fitted with a directional cowl to avoid light-spill onto the watercourse.
- Limited to the minimum necessary extent and duration and.
- Designed to avoid unnecessary spill towards sensitive receptors.

4.12 Carbon and Sustainability

The Principal Contractor will commit to carbon reduction and sustainability measures during the construction process. This will include, but not be limited to the following:

- Reuse of existing materials on site.
- Material optimisation.
- Local sourcing of materials.
- Minimising transport movements.
- Reduction of idling plant.
- Use of renewables/battery storage.

5 General requirements

5.1 Communication

All site personnel will receive health, safety and environmental induction talks before they commence work and briefings to ensure their understanding for carrying out their allocated duties. Briefings will be given before carrying out work for the first time, and if the work process / environment changes. Site specific briefings will be developed from the risk management process including the summary details from this CEMP.

The operation of the sites will be working to any environmental requirements imposed by Mid and East Antrim District Council and the Department of Agriculture, Environment and Rural Affairs.

5.2 Compliance

The Principal Contractor is responsible for ensuring the requirements set out in this CEMP and in the contractor method statement are followed. They are also responsible for ensuring all site staff are briefed on the mitigation measures set out in this document.

5.3 Permits, Licences and Consents

The Principal Contractor will be responsible for ensuring all necessary permits, licences or consents required are applied for and in place prior to works commencing such as ASSI consent and Schedule 6 (if required).

5.4 Roles and Responsibilities

Everyone working in the site either as a direct employee, contingent labour supply or through a sub-contractor has a responsibility to:

- Implement the CEMP.
- Protect the environment from damage.
- Comply with specified mitigation measures and actively manage environmental risk on the site.
- Report any environmental or social concerns to their supervisors.
- Comply with specified Safe System of Work.
- Only carry out tasks if they have the required understanding qualifications and where necessary certification.

The following roles are responsible, as described, for the delivery of the environmental requirements set out in this CEMP:

5.4.1 Site Manager Responsibilities

- Ensuring the site is secure.
- Ensure there are first aid facilities and appropriately trained first aid personnel.

- Ensure spill kits are available, and staff are appropriately trained in their use.
- Ensuring that all site works are carried out in accordance with method statements task briefings and activity briefings.
- Ensure that staff under their supervision are aware of their environmental responsibilities.

Ensure that all those that work on site:

- Receive a Site Induction including briefing on environmental issues pertinent to the site.
- Understand and obey the Site Rules.
- Are made aware of the emergency egress arrangements muster points first aid facilities and first aiders spill and clean up procedures.
- Are aware of access/egress routes access routes for plant parking areas and storage areas.
- Are aware of all environmental matters which arise on site.

Ensure the activities on site:

- Are carried out under Translink Operational Safety Rules where necessary.
- Have task specific risk assessments and method statements (RAMS) in place identifying any environmental issue which may be applicable.
- Are carried out in accordance with the requirements of any associated RAMS.

5.4.2 Environment Manager Representative Responsibilities:

- Undertaking site audits to measure compliance with the CEMP and RAMS.
- Raising action plans to address any non-compliance.
- Advising the Site Manager on all environmental, health and safety issues.
- Coordinating environmental health and safety within the site and developing and maintaining compliance with policies standards and procedures applicable to the site.
- Ensure work is carried out in accordance with legislation and consents and the CEMP with regards to any environmental activities on the site.
- Determine what level of environmental support to provide at the site and allocates this resource accordingly.
- Ensure site staff are working in accordance with agreed RAMS and in accordance with induction training with regards to environmental risk.
- Ensuring compliance with Environmental legislation and consents objectives targets and client environmental responsibility.
- Responsible for delivering toolbox talks.
- Ensuring that the site has an emergency egress arrangement so that personnel can leave safely in the event of an emergency.

5.4.3 General Operatives Responsibilities

- Attending the toolbox talk given by the Site Manager or HSEQ Representative ahead of activities commencing and adhering to guidance contained therein.
- Ensuring environmental health & safety mitigation measures are carried out during the course of their duties.
- Working considerately with a good working ethic in order to minimise adverse environmental health and safety impacts and follow all site rules communicated during briefings and induction/training sessions.
- Informing their supervisors of any environmental health and safety issues they have noted in the site so that these can be communicated to the site management team for further investigation.

5.5 Key Personnel Contact

The Principal Contractor will confirm the key personnel to be added to the CEMP.

5.6 Competence

The Site Manager will ensure that all staff are competent to undertake their roles. They will also provide the following:

- General induction/awareness: roles and responsibilities of staff, expectations and targets, site rules and HSE issues for each site location.
- Toolbox Talks covering specific task-related matters of environmental risk shall be provided e.g. training on water pollution prevention before all works.
- Site staff will be competent to perform tasks that have the potential to impact the environment. Competence is defined in terms of appropriate education, training and experience. If project specific training is required, training will be appropriate to the role and seniority of staff.

5.7 Stakeholder Engagement

It is the responsibility of the Site Manager to ensure letters are issued and sufficient notice is given to external stakeholders regarding upcoming works at the site that may cause a disturbance.

A record will be maintained of discussions held with statutory authorities.

5.8 Internal Communication

The Principal Contractor is responsible for ensuring that all staff, including subcontractors, receive a site induction, in addition to task briefings, site specific briefings, start of shift briefings, and toolbox talks.

The site induction will include:

- Environmental mitigation.
- Toolbox talks that are to take place for the site to include:.

- Identification and actions related to invasive species.
- Locations of local wildlife sites/ designated areas.
- Waste management.
- Pollution prevention measures.
- Spillage response.
- Control of noise and dust.

5.9 Monitoring and Assurance

Internal audits will be carried out by the client HSEQ team and environmental representatives as required.

5.10 Records and Documents

A copy of all licences, consents, permits or permissions granted to the Principal Contractor shall be provided to the Translink Representative within 7 days of receipt.

6 Auditing, Monitoring and Review

To meet the requirement of the CEMP, environmental monitoring of the project and its impacts will be undertaken throughout the construction phase.

The Principal Contractor will ensure that scheduled environmental monitoring is undertaken. This will enable the overall effectiveness of the environmental mitigation measures and compliance procedures to be assessed and allow any area of non-compliance to be identified so that corrective actions can be taken.

These checks will include (but are not limited to):

- Confirmation that fuel is stored appropriately.
- That management rules are adhered to.
- All environmental buffers are maintained.
- Sediment and erosion control measures of the surface water management plan are in place and functioning.
- All environmental records including completed checklists will be retained at the site office.

In addition to routine inspections, event-based checks will be undertaken by the Principal Contractor following a significant event, such as a storm or heavy rainfall.

All incidents (including near misses) will be reported.

The CEMP will be updated as necessary throughout the construction period.

References

CIRIA Guidance: Control of water pollution from construction sites. Guidance for consultants and contractors (C532D).

Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)

Construction (Design and Management) Regulations (Northern Ireland) 2016

Control of Pollution Act 1974

Historic Monuments and Archaeological Objects (NI) Order 1995

Invasive Alien Species (Enforcement and Permitting) Order (Northern Ireland) 2019

Marine and Coastal Access Act 2009

Marine Act (Northern Ireland) 2013

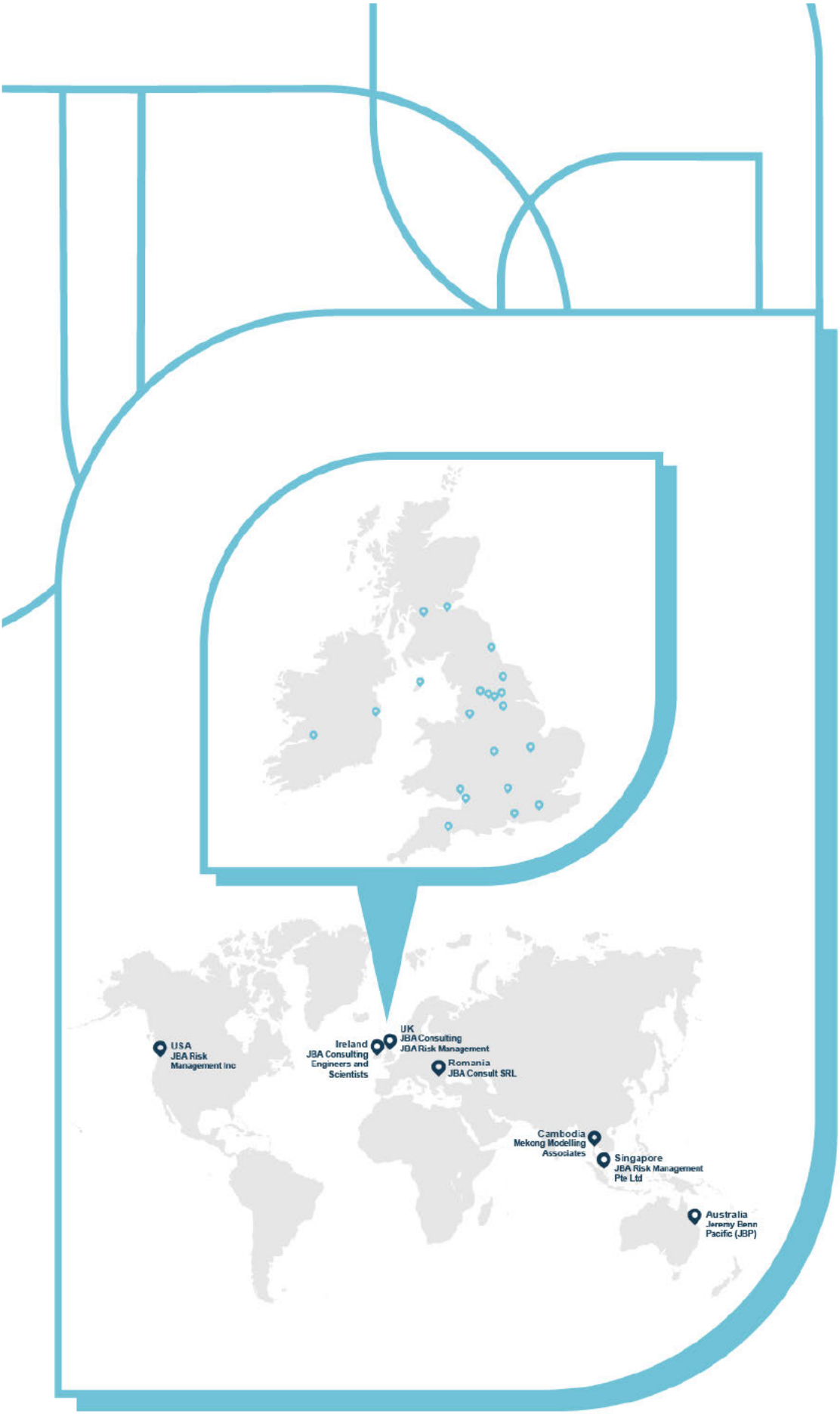
Planning (Listed Buildings) Act (Northern Ireland) 2011

Pollution Control and Local Government (Northern Ireland) Order 1978

Waste and Contaminated Land (Northern Ireland) Order 1997

Wildlife (Northern Ireland) Order 1985 (as amended)

Wildlife and Natural Environment Act (Northern Ireland) 2011



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