AtkinsRéalis

Construction Environmental Management Plan

Galway County Council

June 2025

0088798DG0078

N59 OUGHTERARD FOOTBRIDGE

Disclaimer: This report contains sensitive information on Freshwater Pearl Mussel and must be redacted prior to publishing of this document publicly.

Notice

This document and its contents have been prepared and are intended solely as information for Galway County Council and use in relation to N59 Oughterard Footbridge.

AtkinsRéalis assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

This document has 76 pages including the cover.

Document history

Document title: Construction Environmental Management Plan

Document reference: 0088798DG0078

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
0	Draft	OW	AMC	DE	DE	19/05/2025
1	Final	OW	AMC	DE	DE	17/06/2025

Client signoff

Client	Galway County Council
Project	N59 OUGHTERARD FOOTBRIDGE
Job number	0088798
Client signature/date	

Contents

Tables

Figures

1. Introduction

1.1 Overview

This Construction Environmental Management Plan (CEMP) has been prepared by AtkinsRéalis on behalf of Galway County Council as part of the planning application for the development of Oughterard Footbridge in Oughterard Co. Galway. The proposed development comprises a footbridge crossing the Owenriff River ca. 150m east (downstream) of the existing N59 Oughterard Bridge. Refer to Figure 1-1 for the location and extent of the project red line boundary.

1.2 Purpose of CEMP

The purpose of this CEMP is to provide recommended measures to avoid, minimise and control adverse environmental impacts associated with the construction of the proposed project. The CEMP will document the commitment to safeguarding the environment through the identification, avoidance and mitigation of the potential negative environmental impacts which are associated with the proposed development.

The works Contractor will undertake the works in accordance with the provisions of the CEMP. This may be added to, to address other detailed construction matters. The CEMP will be updated by the Contractor to address any subsequent planning conditions relevant to the proposed development.

The CEMP aims to define good practice as well as specific actions required to implement mitigation requirements as identified in the following environmental reports and documents reviewed by AtkinsRéalis:

- AtkinsRéalis, (2025*), Environmental Impact Assessment Screening*, Eirspan 341 N59 Oughterard Footbridge;
- AtkinsRéalis (2025) *Natura Impact Screening*; Eirspan 341 N59 Oughterard Footbridge;
- AtkinsRéalis (2025) *Appropriate Assessment Screening Report*, Eirspan 341 N59 Oughterard Footbridge;
- Caroline Shiel (2024). Bat Survey of Derelict Restaurant Building and Section of Owenriff River in Oughterard Co. Galway;
- Pascal Sweeney, Sweeney Consultancy (2024). Owenriff Aquatic Survey. SAC 000297 Qualifying Interests Report 2024;and,
- SLR Environmental Consulting (Ireland) Ltd (2025) N59 Pedestrian Bridge: OPW Section 50 Report.

This document has also been informed by key findings from site visits carried out by an experienced AtkinsRéalis Ecologist and Environmental Consultant on the 27th February, 24th June, 4th November 2024 and the 30th January 2025. Aquatic surveys were conducted by Sweeny Consultancy on the 3rd and 4th of July 2024. Bat surveys were conducted by Dr. Caroline Shiel between June and August 2024.

The party responsible for the preparation of the CEMP is likely to change over the life of a project. In the absence of Irish guidelines, the UK guidelines LA 120 Environmental management, March 2020 for CEMP were followed.

1.3 Structure

This CEMP has been structured as follows:

- Section 1 outlines the purpose of the CEMP and introduces the proposed development/project.

- Section 2 describes in detail the proposed development/project.
- Section 3 outlines the minimum standards, legislation and guidance required of the Contractor during the development of the CEMP.
- Section 4 identifies the relevant roles and responsibilities for developing, implementing, maintaining and monitoring environmental management.
- Section 5 sets out the mechanisms through which environmental requirements would be managed.
- Section 6 sets out the general requirements of the CEMP.
- Section 7 provides a summary of minimum requirements that should be implemented by the Contractor.
- Section 8 sets out the procedures for the Emergency Response Plan.

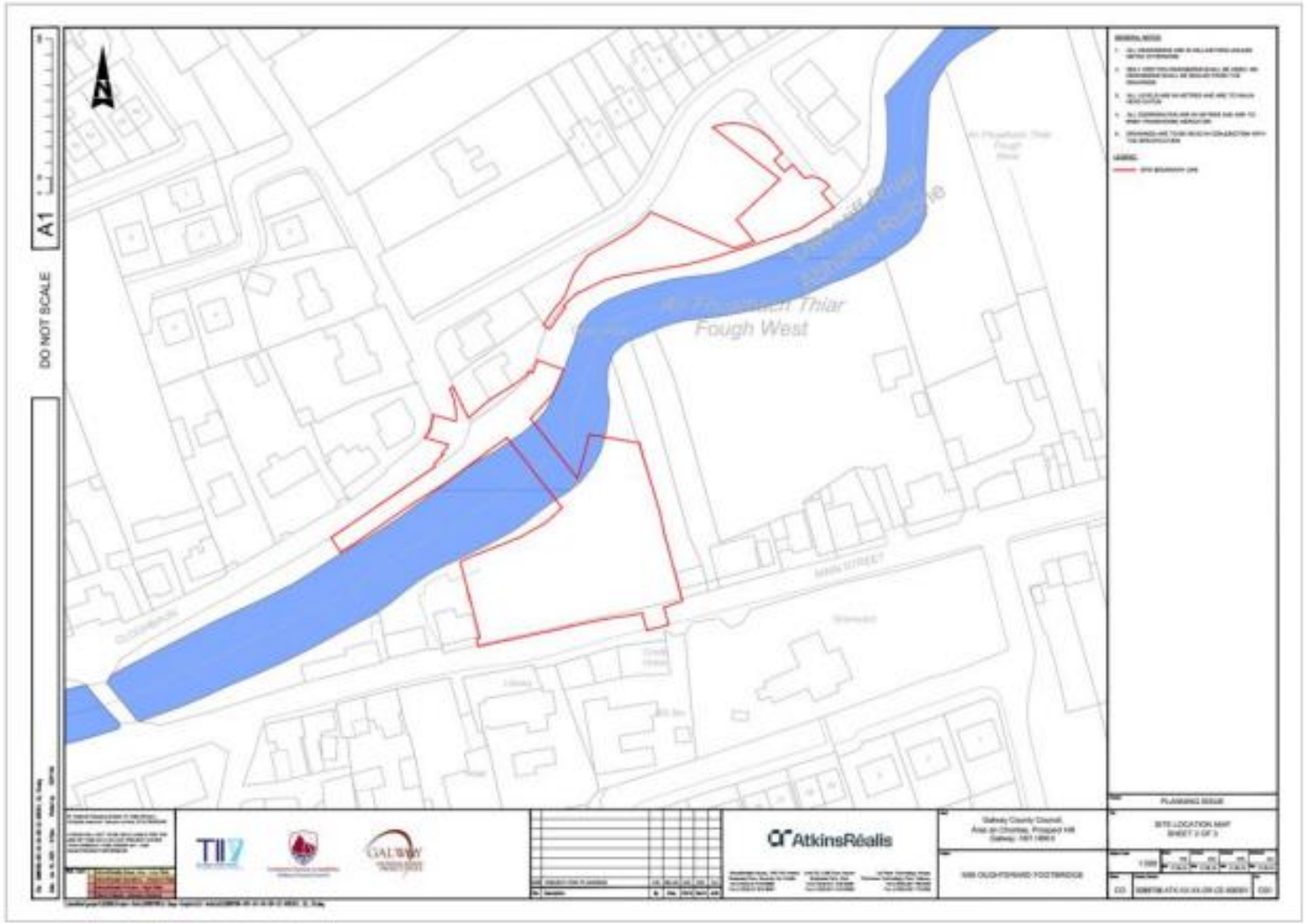

Figure 1-1 - Red Line Boundary of Proposed Development

2. The Proposed Development

2.1 Site History and Surrounding Land Use

The proposed development involves the construction of 1no. pedestrianized bridge within Oughterard, Co. Galway as follows:

Oughterard Footbridge

The site is located approx. 150m east (downstream) of the existing N59 Oughterard Bridge (GC-N59-040.00). The ITM coordinates for the site location are as follows:

X: 511801 Y: 742754

The proposed footbridge crosses over the Owenriff River. The proposed north abutment is on a riverside path near Carrowmanagh Rd, and the south abutment is in an area of woodland (currently private residential property). The footbridge approach paths tie into proposed zebra crossings over Carrowmanagh Rd on the north side, and over N59 Clifden Road on the south side (adjacent to the Claddagh Credit Union).

The location map for the structure is shown in Figure 2-1.

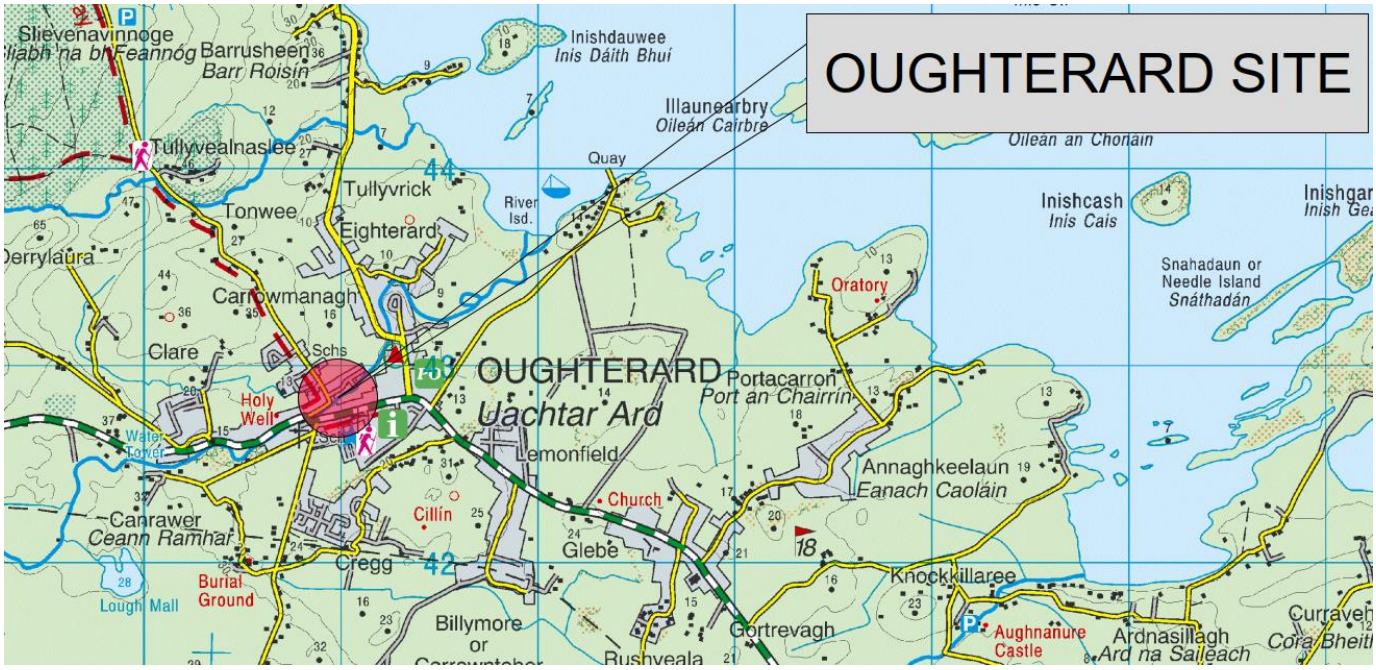

Figure 2-1 - Location Plan

See existing general arrangement (GA) layout plan drawing (Figure 2-3), which shows topography and existing utilities at the site. The utility information is based on utility provider consultations, visual inspection of surface / manholes and ground penetration radar scan results.

The following existing utilities are present at the site:

- North riverbank path adjacent to the proposed abutment and ramp:
  - 225mm diameter buried concrete combined sewer pipe (1.56m depth below ground level (bgl)).

    - 100 mm diameter buried watermain (1.00m depth bgl).
    - No overhead cables.
- Carrowmanagh Road adjacent to the proposed pedestrian crossing:
    - 225mm diameter buried concrete combined sewer pipe (1.56m depth bgl).
    - 100 mm diameter buried watermain (1.00m depth bgl).
    - Empty buried Aurora & Eir ducts / manholes.
    - Overhead electric cables.
    - Road gully.
- South riverbank and private land adjacent to the proposed abutment and approach path:
    - Buried pipe – combined sewer (4.00m depth, UTT QL B4).
- N59 Clifden Road at the proposed pedestrian crossing:
    - Buried water main (1.1m deep bgl).
    - Buried Eir telecoms (0.3 to 0.5m deep bgl).
    - Road gully and buried 225mm dia. PVC pipe (0.5 to 0.9m depth bgl).
    - Overhead electric cables.

2.2 Proposed Development Description

The proposed development is located in Oughterard, County Galway – ca. 150m east (downstream) of the existing N59 Oughterard Bridge and includes for the construction of a footbridge crossing the Owenriff River. The proposed footbridge will be approximately 48m span. Abutments will setback ca. 2.5m and 6.2m from the riverbank crest on the north and south side, respectively (see Figure 2-3).

The lighting design has been developed with the following principal considerations:

- Provide adequate illumination to contribute towards the safe use of the proposed footbridge and approach paths.
- To minimise the impact of lighting on bats in the local environment, and on fish in the Owenriff River.
- Minimise light pollution and visual glare to the surrounding neighbourhood - contain the lighting within the site.
- Provide a high-quality public realm space.

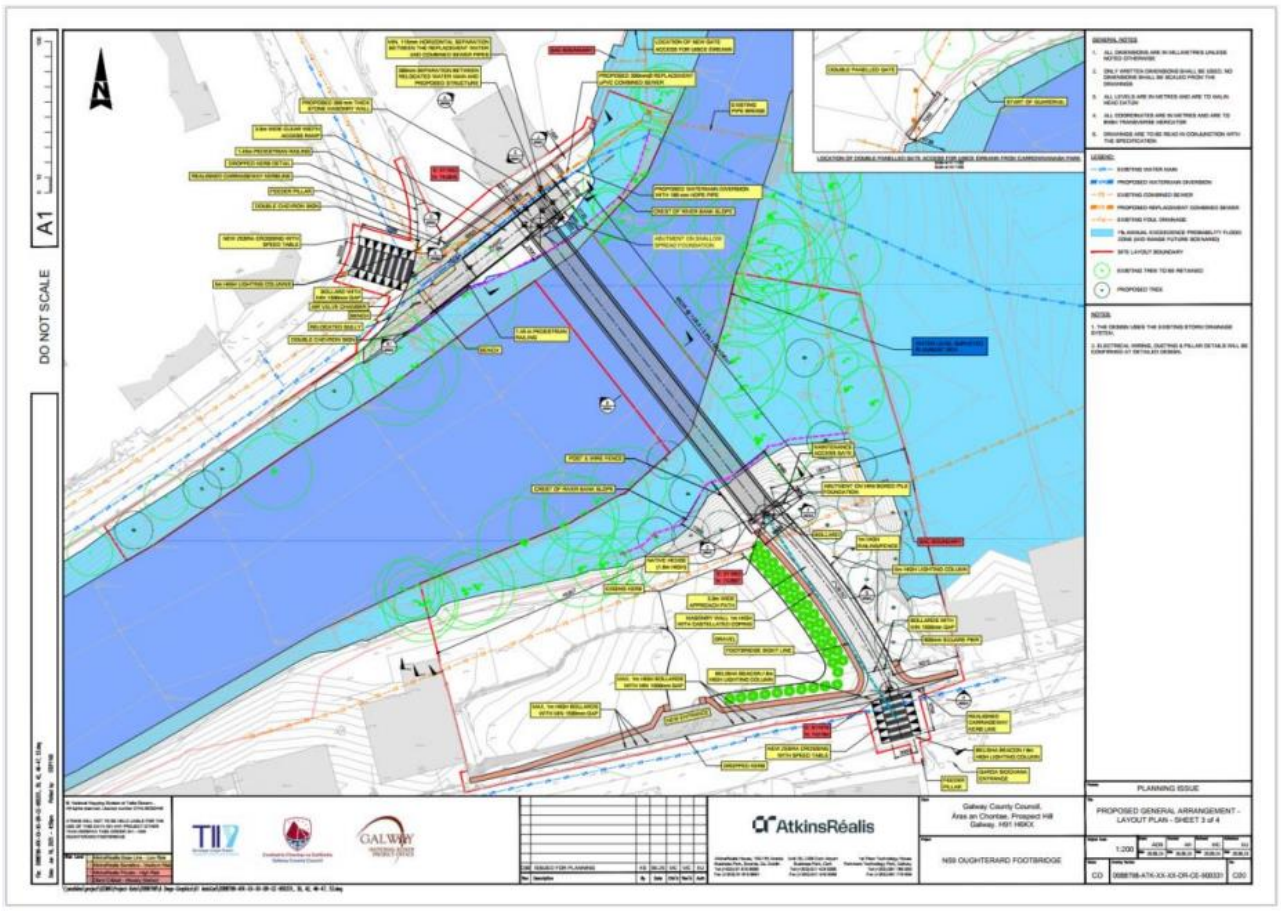

Figure 2-2 - Proposed Development layout plan of the Oughterard Pedestrian Bridge

The proposed sequence of works for the construction of the pedestrian bridge includes:

- Site Investigations.
- Enabling Works including replacement/diversion of buried utilities and set up of a crane platform.
- Construction Works including installation of a spread foundation on the north side, and a mini-bored RC pile foundation on the south side. Once the crane is set up, the footbridge will be delivered in sections to site, assembled, then lifted into position. Approach paths, boundary walls, zebra crossings etc. will then be completed.
- Completion Works - the temporary fencing, lighting, site compound etc. will be removed.

These stages are outlined further below.

2.2.1 Site investigations

The following site investigations will be carried out at detailed design stage:

- North abutment/ramp:
  - Slit trenches to confirm the arrangement of underground utilities and to determine the bedrock profile over the ramp/abutment extents.
- South side (abutment, crane pad and approach path):
  - Trial/inspection pits.

- Rotary coring.
- Slit trenches to confirm the arrangement of underground utilities.

A temporary site compound will be set up for approx. 1-2 weeks. The compound will be setup at least 50m away from the Owenriff River (see Figure 2-3).

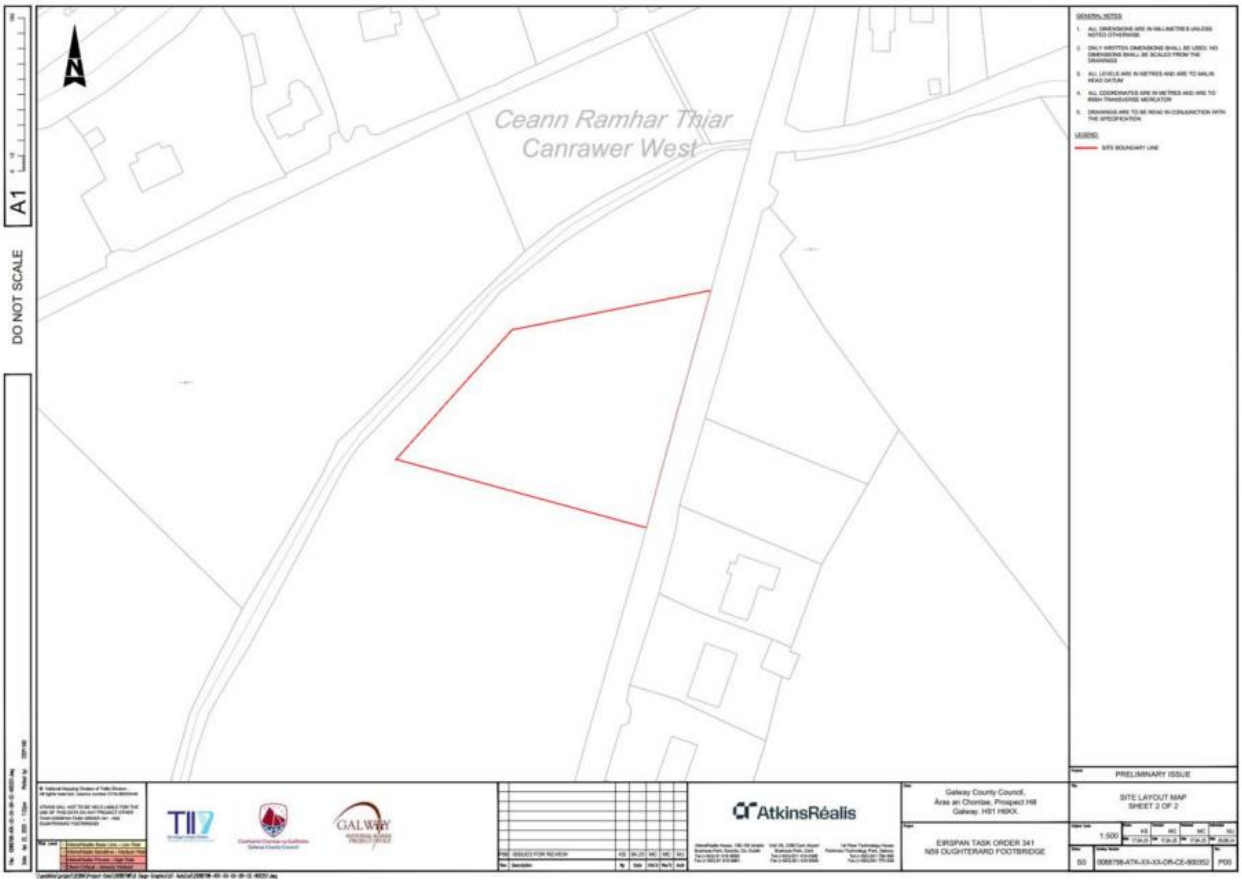

Figure 2-3 - Proposed Site Compound location (Station Road)

2.2.2 Enabling Works

A site compound will be set up before commencement of the works. It is not permitted to locate the site compound within 50m of the Owenriff River. It is envisaged that the site compound will be setup in one of the fields along Station Road as shown in Drg. No. 0088798- ATK-XX-XX-DR-CE-900014, which is approximately 300m south-west of the site. All plant and equipment will be maintained, refuelled, and stored at the compound location. Oil will be stored in an appropriately contained bunded facility at this location. Refuelling is not permitted on the riverbank.

Site clearance will be undertaken over the extents required for the proposed development. Trees will be removed as specified in the tree impact/preservation plan. A total of 60 trees are to be removed; 31 Ash (*Fraxinus excelsior*), 12 Sycamore (*Acer pseudoplatanus*), 14 Alder (*Alnus sp.*), 2 Willow (*Salix sp.*) and 1 Hawthorn (*Crataegus sp.*). Additionally, 1no. existing sycamore tree will be removed on Carrowmanagh Park. Tree branches within 3m of the proposed footbridge will also need to be removed. These works will be undertaken by a qualified arborist under the supervision of the contractor's ecologist.

The site compound is a contractor designed element. If the site compound needs to accommodate a temporary set-down area for the footbridge and a turning circle for heavy goods vehicles, then the required area of the

site compound is envisaged to be approximately 4500m^2. For this size, approximately 1300m^3 of hardcore/gravel would be used to build up temporary access roads, paths and working area. The Contractor will design the site compound and may determine that a smaller area is sufficient.

Vibration monitoring will be installed on buildings adjacent to the proposed works. Trigger levels will be set to ensure that potential vibration effects are limited to acceptable levels.

A robust fence (Herras type fence complete with debris netting) will be erected to secure the works area. The required length of fence will change with each stage of construction as the works progress (the max. required length of fence is approx. 40m and 70m on the north and south side of the river, respectively). Any water which accumulates within excavations shall be pumped out of works areas, collected in storage tanks, and disposed off-site. A range of silt control measures (such as silt fences, mats, wattles etc.) will be installed on the riverbanks.

Protective fencing will be erected around trees to be retained – as recommended in the tree impact/preservation plan. Where necessary, ground protection will also be installed to shield soil from damage during construction.

Temporary lighting at the site during construction will be required for security and health & safety purposes. All temporary lighting will be required to meet the lighting requirements with regards to preventing light spillage and any associated negative impacts on the local environment. Any overnight lighting will be kept to a minimum and away from the river.

The 60m length of existing masonry wall along the frontage of the dwelling on the south side (The Old Barracks) adjacent to the N59 Clifden Road will be temporarily dismantled to enable access for plant, components, materials etc. to the site. The masonry will be set aside for when the wall is re-built/realigned after the works are complete.

On the north riverbank, the existing masonry boundary wall around the adjacent house (approximately 25m length) will be dismantled and masonry will be set aside to be re-used.

2.2.3 Watermain and combined sewer works

The water main and combined sewer replacement works on the north riverbank will be carried out during a dry weather forecast period (5 days), as this will minimise flows in the combined sewer and reduce the risk of potential siltation impacts associated with excavations. The expected duration of the works is up to 5 no. days.

On the north riverbank adjacent to the boundary wall, a trench will be excavated to 1.4m depth below ground level (BGL) to access the buried utility pipes. The excavated fill (approximately 60m^3) will be set aside at the site compound away from the river.

The existing 225mm dia. concrete sewer pipe will be replaced with a 300mm dia. uPVC pipe. An indicative methodology is shown below:

1. Lay plastic sheeting and absorbent materials on the ground to catch any sewerage spills.

2. Set up a jet-vac truck (expected 10 to 12 m3 capacity) on Carrowmanagh Rd adjacent to the site. Provide a temp over-pumping bypass from the manhole on Carrowmanagh Rd along the riverbank to the sewer side spur manhole (buried) on the grass amenity area on Carrowmanagh Park. The capacity of the required over-pump bypass will be based on flow estimates. The temporary bypass will be continuous without joints along the riverbank to minimise the risk of leaks. Test the over-pumping system and ensure a back-up is available in case it fails.

3. Jet clean the existing sewer between the manholes

4. Plug the sewer pipe to be replaced at the manholes. Collect sewerage in the jet-vac truck during the sewer replacement works. In the unlikely event that the capacity of the jet-vac truck is exceeded, the excess sewerage shall be taken by the temporary over-pump bypass.

5. Remove the existing concrete sewer pipe by loosening fittings (a concrete disc cutter may be needed). The existing sewer should be empty after jet cleaning, but any remaining sewerage in the pipe shall be drained into a container. Bung the existing sewer pipe and remove it. The holes in the manholes will be enlarged to accommodate the larger diameter of the proposed sewer pipe. Power tools will be used with vacuum dust extraction to avoid potential ecology impacts.

6. Install the new 300mm dia. uPVC sewer pipe between the manholes.

7. Test the system and backfill.

8. Remove the bungs in the manholes. Flush the over-pumping bypass with water, drain, then remove. Use containers and/or absorbent materials to catch any remaining liquid in the bypass system. Carefully dispose of containers and soiled materials at a licensed waste facility. Sewerage in the jet-vac truck shall be emptied into the sewer network at a manhole at least 50m from the river. It is envisaged that a sewer manhole at the proposed site compound on Station Rd will be used.

9. Clean the work area. Remove the plastic sheet and absorbent materials. Carefully dispose of containers, plastic sheet, and soiled materials at a licensed waste facility.

The existing 100mm PVC dia. water main will be replaced with a 180mm dia. HDPE pipe and realigned with a 300mm offset from the proposed north abutment/ramp. An indicative methodology is shown below:

1. Remove the existing PVC water main pipe (a disc cutter may be needed).

2. Install the new HDPE water main pipe and connect to the existing pipe with bushings/reducers.

3. Test the system and backfill. After the sewer and water main works are complete, the excavation will be reinstated with the excavated material.

The adjacent masonry boundary will then be rebuilt (25m length, 800mm height and 300mm width) in a revised alignment to achieve 2.5m clearance to the proposed north abutment/ramp. The boundary wall foundation will vary in depth from 0.6m to 1.4m BGL.

The following enabling works will be needed to accommodate the proposed footbridge assembly and lifting operations in The Old Barracks private property: -

- The area under and around the proposed Liebherr LG 1750 crane shall be cleared of vegetation and topsoil (approximately 380m2). The ground will be regraded to the required level. Any soft spots shall be replaced with suitable fill. The temporary crane pad/platform is a contractor designed element, subject to the requirements/constraints provided in the works specification. It will be based on geotechnical design to be carried out after ground investigations are carried out after planning. The following is envisaged: -
  - Geotextile strengthening (approximately 640m2) and a sub-base of compacted wash gravel or crushed rock (approximately 600mm thick equating to 380m3 in total) shall be laid under the proposed crane pads as necessary. The use of an interlocking, modular mat system will be considered by the Contractor to reduce the depth of sub-base required, subject to Ground Investigations.
  - A prefabricated crane platform consisting of a reinforced concrete (RC) slab (approximately 300mm thick), prefabricated columns, and precast strip footings on upfill will be installed where the ground

falls away towards the boundary with the adjacent house on the east side (Ringabella). The estimated total volume of reinforced concrete is 70m3. Rotary core piles may be used, provided they minimised vibration impacts on the riverbed and adjacent buildings. Vibration monitoring will be implemented with trigger levels to ensure that vibration effects on sensitive receptors are within acceptable limits. A before and after condition survey of adjacent buildings will also be undertaken. The works will be restricted to typical periods.

- There is an existing buried combined sewer (150mm diameter. at approximately 4m depth) which runs west to east approximately 2m south of the proposed south abutment. This is within the influence zone of the Liebherr crane pad loads. This buried pipe will be assessed after ground investigations are carried out after planning. It is expected that the surcharge effects on the buried pipe will be within acceptable limits given it is 4m depth below ground level. The crane pads, hardstanding area and temporary crane platform will be designed to ensure that load constraints are satisfied.
- A 5m wide area shall be cleared and regraded as necessary to enable assembly of the crane main boom. Temporary trestles will be used to setup due to the uneven ground.
- An approximately 8m wide area shall be cleared for assembly of the footbridge sections. This would require removal of approximately. 60m3 of existing fill, and a similar quantity of Class 6N2 upfill (crushed rock/gravel) would be needed to build up a temporary footbridge assembly area. The excavated fill would be set aside at the site compound to be used for reinstatement after completion of the works. Temporary trestles will need to be set up due to the uneven ground.

2.2.4 Construction Works

The following construction works are proposed:

1. For the north abutment and ramp:
   a. Excavate approximately 70m^3 of existing fill down to bedrock level which is expected at 1.4m below ground level (BGL) (5 days).
   b. Pour approximately 3m^3 of in-situ blinding concrete (approximately 75mm thick) (10 day).
   c. Install PC foundations and substructures (total approximately 90m^3 of concrete) (5 days).
   d. Backfill around the edge of the structure (2 days)
   e. Seal joints between precast elements (5 days)
   f. Install 2 no. bearings (5 days).
   g. Install parapets (2 days).

2. For the south abutment:
   a. Excavate approximately 10m^3 of existing fill (5 day)
   b. Install bored mini-RC piles (1m^3 of concrete) (5 days)
   c. Lay approximately 1m^3 of concrete blinding (approximately 75mm thick) (10 days)
   d. Construct an in-situ RC pile cap (7m^3 of concrete) (15 days)
   e. Backfill around edges of structure (2 days)
   f. Install 2 no. bearings (5 days).

3. For footbridge Installation:
   a. Mobilise Liebherr LG 1750 crane to site on the south side in the curtilage of The Old Barracks.
   b. Transport the 3 no. prefabricated footbridge sections to site. It will be transported either directly from the steel fabricator to The Old Barracks, or from a temporary set-down area nearby (e.g., the site compound).

c. Assemble the footbridge in the assembly area (1 day). The prefabricated steel superstructure consists of approximately 8m3 of structural steel, 7m3 of glass reinforced polymer (GRP) decking, and 96m length of parapets.
d. Lift the footbridge on to the abutments (1 day).
e. Demobilise the crane and trestles (2 days).
f. Remove hardcore/upfill used for the temporary footbridge assembly and crane pad area. Reinstate excavated fill and reinstate finishes/landscaping to the private property as appropriate (10 days).

4. For the Finishes:
   a. Construct the stone masonry wall (1m height by 0.7m width) flanking the proposed south approach path to the footbridge – consisting of 3m3 of in-situ concrete base and 18m3 of stone masonry (10 days).
   b. Reinstate the stone masonry wall (1m height by 0.7m width) along the N59 frontage of The Old Barracks– consisting of 4m3 of in-situ concrete base and 30m3 of stone masonry (10-15 days). The realigned boundary will accommodate the relocated entrance to The Old Barracks.
   c. Realign the kerbs at the edge of Carrowmanagh Rd and N59 Clifden Rd, install surfacing to the relocated The Old Barracks entrance and new footpath on the north side of the N59 Clifden Rd, and provide drop kerb details at the entrances (approximately 90m length of kerbs). Relocate the existing gully adjacent to the proposed zebra crossing on Carrowmanagh Rd to suit the amended kerb alignment. Drainage pipe to be modified to suit (20 days total).
   d. Construct the approach paths, which consist of 50mm thick limestone paviours (approximately 12m3) and 30mm thick grout bed (approximately 7m3) (20 days).
   e. Install the railing on the east side of the southern path (26m length) (10 days).
   f. Construct the zebra crossings with raised tables (11m3 of modular pre-fabricated units or road surfacing) (10 days).
   g. Install road signs, lighting, ducting, feeder pillars etc (5 days).
   h. Install a double panelled gate (7m wide) in the masonry boundary wall at the south-west end of the grass amenity area on Carrowmanagh Park.
   i. Landscape planting as shown in in Figure 2-5 and Figure 2-6 (15 days). This includes planting of 39 no. standard sized trees on Carrowmanagh Park amenity area, 23 no. standard sized trees adjacent to the proposed footbridge, and hedging in The Old Barracks. The Landscape Design for the Proposed Development is outlined in Section 2.6 Landscape Design below.

2.2.5 Completion of Works

Once works are completed, the following activities will be undertaken:

- Remove the site fencing and temporary lighting.
- Remove the site compound.
- General clean and tidy of the site.
- A snag survey will be undertaken and any remedial actions undertaken.

A layout plan for the proposed development is shown in Figure 2-3 below.

2.2.6 Materials to be Used

The following materials and components will be used:

- Concrete.
- Reinforcement steel.
- Structural steel (coatings to be applied offsite).
- Stainless steel parapets.
- Bridge bearings (elastomeric).
- Light fittings and ancillary products required to install pedestrian/public lighting.
- Footbridge deck planks (timber or glass reinforced polymer (GRP)).
- Road signage.
- HDPE replacement water main pipe.
- uPVC replacement sewer pipe.
- Structural backfill and upfill (crushed rock/gravel etc).

2.3 Key Stages

The proposed development will involve the following key work phases:

- Appointment of the Contractor.
- Detailed Design Stage.
- Site preparatory works including the preparation of all required Detailed Safety and Health, and Environmental Management documents.
- Site mobilisation.
- Construction Stage.
- Completion.
- Demobilisation.
- Commissioning.
- Energisation.
- Operational Stage.

Details of machinery to be used on site are unknown at this time, but are likely to be standard site equipment including tracked excavators, dumpers, bulldozers etc.

2.4 Programme and Phasing of Works

The following is an overview of the programme and phasing of the works (subject to receipt of planning and statutory consents):

- Site investigations: The expected duration is two weeks, and the expected start date is Q3 2026.
- Enabling & construction works: Expected duration is nine months from mobilisation to completion, and the expected start date is Q4 2026.

The duration that excavations will be left exposed will be minimised as far as reasonably practicable. Excavations will be scheduled so that subsequent works such as blinding, in-situ RC, or PC installation can follow on quickly. This is to minimise the potential for silt to be generated which mitigates the risk of silt laden surface water run-off into the river. Excavation works will be carried out during relatively dry weather to mitigate the risk of siltation runoff into the river. Weather forecast / rainfall will be monitored. Monitoring of the weather forecast and turbidity levels will be undertaken, and trigger levels will be established to stop work.

The expected duration of significant disruption to The Old Barracks is approx. six weeks. During this period, the following would be undertaken:

- Install temporary crane pad & footbridge assembly area.
- Mobilise the crane to site.
- Deliver the footbridge and lift into position.
- Demobilise the crane.

The expected duration of significant disruption to the house (Riverside) adjacent to the proposed north abutment is approx. 13 days. During this period, the existing boundary wall adjacent to the proposed north abutment will be dismantled, the watermains and combined sewer will be relocated/replaced, and the wall will be rebuilt in a realigned position. The expected duration of disruption to the grass amenity area on Carrowmanagh Park is expected to be approx. 15 days during planting of the compensation trees.

2.5 Management and organisation of Works

It is envisaged that the proposed site compound for the works will be set up in the field along Station Road (south-west of the site) shown in Figure 2-2, which is owned by Galway CC. In the event that this site is not available at the time of construction another suitable site will be located in the surrounding area. The site compound must be a minimum 50 meters from the Owenriff River and a buffer of 10m from any drain or stream must be maintained. The site must also be surveyed for potential sensitive habitats or species.

Materials and plant required for the works are anticipated to be stored in this compound. All storage areas shall be appropriately bunded where required. Fuelling of plant is anticipated to be in a designated fuelling area within the compound. The compound will provide for the following:

- Welfare/office facilities for site staff.
- Plant/machinery parking/storage area.
- Fuel storage/refuelling area.
- Segregated waste area.
- Construction staff parking.

Normal construction working hours for the development will be:

- Monday to Friday: 08:00 to 18:00
- Saturday: 09:00 to 13:00.

An ecological specialist will be employed by Galway County Council to ensure compliance with all environmental commitments. An Ecological Clerk of works (ECoW) will be employed by the contractor for the duration of the project. The ECoW will update the outline CEMP and be responsible for carrying out toolbox talks and the daily environmental monitoring and checks. The ecological specialist will be required to sign off on the CEMP prior to the commencement of construction to ensure it complies will all environmental commitments. The ecological specialist will review all weekly environmental reports prepared by the ECoW and will carry out regular audits of the site. The ecological specialist will be present on site for all major work elements such as excavations, coring, concrete pours, installing of abutments and footbridge. Both the ECoW and ecological specialist must be suitably qualified having held protective species licences for relevant protected species and be full members of a professional body such as CIEEM or similar.

The following temporary traffic management is envisaged – details are subject to confirmation: -

- Traffic management will be needed on the N59 Clifden Road to narrow the carriageway (two weeks) and provide a working space for takedown and reconstruction of the existing masonry wall frontage to the Old Barracks.
- Closure of the eastbound lane of the N59 Clifden Road will be needed along the frontage of The Old Barracks to enable HGVs to deliver/collect the crane, footbridge sections, components etc.
- Lane closures with stop/go lights and shuttle working will be needed on N59 Clifden Road to construct the proposed zebra crossing with raised table. It is envisaged that 1-2 days would be sufficient.
- Traffic management will be needed on Carrowmanagh Rd to narrow the carriageway and provide a working space for realigning the kerb and modifying the footway.
- Lane closures with stop/go lights and shuttle working will be needed on Carrowmanagh Road to construct the proposed zebra crossing with raised table and realign the kerb line.
- The contractor will develop a traffic management plan (designed by a suitably qualified person).

2.6 Landscape Design

The proposed development will require the removal of woodland on both sides of the river; however, the majority of tree removal will be on the southern riverbank. An arboricultural survey was completed, and a tree impact/preservation plan has been prepared (the plan is included within the Arboricultural Assessment which is included in the planning pack) (Noel Lane, 2024).

A total of 60 no. tree will need to be removed; 31 Ash (Fraxinus excelsior), 13 Sycamore (Acer pseudoplatanus), 14 Alder (Alnus sp.), 2 Willow (Salix sp.) and 1 Hawthorn (Crataegus sp.), although 30 of these are Ash trees in different stages of decline due to Ash Die Back disease. The impact on woodland in the areas will be mitigated through design minimising the number of trees removed and planting trees to replace those being removed. There is not sufficient space adjacent to the proposed footbridge to plant all the replacement trees. As such, additional land on Carrowmanagh Park (approx. 100m north east of the proposed footbridge) will be acquired by Galway County Council to plant the remainder of the trees. Planting in this area will replace trees within the river corridor and so be available to species currently using the woodland. Also, it will provide additional screening of the river from Carrowmanagh Park reducing light pollution on the river from this source. A landscape plan has been developed based on the project design and tree impact/preservation plan. See Figures 2-4 and 2-5 for the landscape plan. A full scale version of the landscape plan can be found in the Landscape and Visual Impact Assessment Report which is included in the planning pack.

Figure 2-4 - Proposed Development Landscape Plan

Figure 2-5 - Carrowmanagh Park off site tree planting landscape plan

2.7 Environmental Constraints

This section summarises the main environmental constraints that relate to the construction phase.

2.7.1 Noise

A review of the Environmental Protection Agency (EPA, 2025) Noise Maps for this area of Oughterard indicates Lden levels on Main Street ranging from 55-59dB to 65-69dB and Lnight levels ranging from 50-54dB to 55-59dB.

2.7.2 Air Quality

Dust arising from excavation and import of soil to the site, along with vehicle movement and emissions from construction vehicles and plant will contribute to reduced air quality. Some activities including infilling of soil, excavations, stockpiling and movement of materials, removal of the boundary walls, and construction vehicle movements may all contribute to generating ambient dust. Ambient Air Quality is reported as 'Good' by EPA (2025), with the closest monitoring station; Rahoon Monitoring Station, located ca. 25km from the proposed development.

2.7.3 Soils and Geology

Soils beneath the proposed pedestrian Bridge at Oughterard Bridge and surrounding area includes:

- Alluvium.
- Till derived chiefly from granite.
- Made Ground.

According to the Geological Survey of Ireland (GSI, 2025), the geological formations underlying the proposed development are of the Owenriff Member: Dark limestone with thin shales and Waterfall Member: Dolomitic limestone, shale. The closest karst features are located ca. 0.46km from the proposed development – Borehole (1123NWK002) and Borehole (1123NWK001) both located to within a 20m accuracy and reported by a site investigation report completed by Irish Drilling Ltd (1994) as an 'Empty cavity' and 'Not infilled' respectively (GSI, 2025).

The GSI provides a methodology for aquifer classification based on resource value (regionally important, locally important and poor) and vulnerability (extreme, high, moderate or low). Resource value refers to the scale and production potential of the aquifer whilst vulnerability refers to the ease with which groundwater may be contaminated by human activities (vulnerability classification primarily based on the permeability and thickness of subsoils).

According to the GSI (2025) the underlying Owenriff and Waterfall Members at the proposed development are classified as a locally important aquifer – bedrock which is moderately productive only in local zones. Groundwater vulnerability underlying the site is classified as 'High' (GSI, 2025). There are no wells within the project site, with the closest borehole located ca. 2.5km southeast of the site. The well use is reported by the GSI (2025) as Other Use and is located to a 500m locational accuracy. There are no designated Public or Group Drinking Water Supply Source Protection Zones within 15km of the Proposed Development (GSI, 2025).

There are 4no. Geological Heritage Area within 5km of the proposed development including: Owenriff Falls (GY109) located ca. 0.15km from the proposed development, Glengowla Lead Mine (GY062) located ca. 3.2km from the proposed development, Oldchapel Quarry (GY107) located ca. 1.89km from proposed development and Lough Corrib (GY093) located ca. 1.2km from the proposed development.

2.7.4 Ecology

There are 4no. European sites within the potential zone of influence (ZoI) of the proposed development with the closest designated site being the Lough Corrib SAC (000297) which is directly crossed by the proposed development. The Connemara Bog Complex SAC (002034) located ca. 5.1km west of the proposed development, Lough Corrib SPA (004042) located ca. 1.2km east from proposed development and Connemara Bog Complex SPA (004181) located ca. 8.7km southwest from proposed development. There is direct hydrological connectivity to the Lough Corrib SAC and further downstream to the Lough Corrib SPA. There is no ecological connectivity to the Connemara Bog Complex SAC and SPA.

There are multiple qualifying interests associated with the Lough Corrib SAC including Freshwater Pearl Mussel (*Margaritifera margaritifera*), White-clawed Crayfish (*Austropotamobius pallipes),* Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), Salmon (*Salmo salar*), Lesser Horseshoe Bat (*Rhinolophus hipposideros*), Otter (*Lutra lutra*), Slender Naiad (*Najas flexilis*) and Slender Green Feather-moss (*Hamatocaulis vernicosus*) amongst others. The habitat within the proposed project boundary may provide suitable refuges, particularly for juvenile crayfish. However, there are no records of Crayfish on the western side of Lough Corrib. Introduction of exotic crayfish species or the crayfish fungal plague (*Aphanomyces astaci*) could have a serious impact on the native crayfish population.

The proposed works are located on land adjacent to a *Margaritifera*-sensitive Area (category: 'Catchments of SAC populations listed in S.I. 296 of 2009'). A freshwater pearl mussel survey was carried out in the Owenriff River in 2014. The AA Screening Report stated '*The Owenriff is one of the most densely populated Margaritifera rivers in the world. It is recommended that the Owenriff Catchment should be one of the most protected catchments in the country for Margaritifera, The survey states that 'it is absolutely essential that complete protection to the river water and riverbed is provided.' The Owenriff population was estimated as ca.1 million in 2009. Monitoring by NPWS estimated that it had reduced to 940,000 in 2012, based on a 1% per year decline owing to insufficient recruitment. Declines were detected in 2011, 2014 and 2015. A large kill followed a drought in 2014. The Owenriff population has been surveyed frequently since the 1990s and monitored regularly since the baseline survey in 2004. Mussels are abundant (over 250 per 100m, often 150/m²) from the hatchery at Canrawer East to upstream of Oughterard wastewater treatment plant (WWTP) discharge. The target is for the species to be sufficiently abundant to maintain itself on a long-term basis as a viable component of the Owenriff system.*'

A fish stock survey conducted on the Owenriff River by Inland Fisheries Ireland (IFI, 2018)[1] identified 6no. fish species including Brown Trout, Salmon, Minnow, Pike, Three-spined stickleback and eel.

An aquatic survey completed by Sweeney Consultancy on the Owenriff River on July 3rd and 4th 2024 recorded the presence of Freshwater Pearl Mussel (*Margaritifera margaritifera*) throughout the study area from upstream of the N59 road bridge to under the next bridge downstream. A number of potential salmon spawning habitats were identified, however no salmon parr were observed during the survey. An IFI fish stocks record from 2020 indicates the presence of reasonably good numbers of juvenile salmon within the Owenriff sub-catchment ca. 3km upstream of the proposed development. Past reports by O'Connor (2007), and Baily and Rochford (2006) identified Sea Lamprey (*Petromyzon marinus*) and Brook Lamprey (*Lampetra planeri*) respectively, however neither species was identified during the survey. As the Owenriff River provides a suitable habitat for both species, their presence cannot be ruled out. Otter (*Lutra lutra*) imprints were identified in bankside during fieldwork, however no holt or couching site was identified.

Oughterard National School (002082) pNHA is located ca. 195m from the proposed development. There are 4no. other pNHA within the potential ZoI of the proposed development including: Lough Corrib (000297) located ca. 1.29km east, Connemara Bog Complex (002034) located ca. 6.42km west, Gortnadarragh Limestone Pavement (001271) located ca. 6.45km southeast and Ross Lake and Woods located ca. 7.34km southeast of the proposed development. The Oughterard District Bog NHA is located ca. 1.6km from the proposed development. There is a hydrological connection between Lough Corrib pNHA and the proposed development.

The proposed development is located within the Corrib Water Framework Directive (WFD) Catchment area and BallycuirkeLoughStream_SC_010 sub-catchment. There is 1no. Environmental Protection Agency (EPA) watercourse within the site of the proposed development; the Owenriff River (IE_WE_30O020200) which is directly crossed by the development and 1no. watercourse within the vicinity of the site - the CANRAWER_EAST stream which flows in an easterly direction into the Owenriff River is located ca. 110m from the proposed development. The Owenriff River discharges to Lough Corrib ca. 1.9km downstream of the proposed works area. The Owenriff River has been assigned 'Poor' status under the Water Framework Directive (WFD) 2016-2021 and is 'At Risk' of not attaining 'Good' status by 2027. Q-values, a biological water quality metric based on the composition of a river's macroinvertebrates community, show that the most recent water quality data is from an EPA sampling station 'Br upstream of Lough Corrib' in 2021, which Q4-5 High water quality ca. 500m downstream of the proposed works in 2021 and as Q4 Good water quality a further ca. 600m downstream at 'D/s Sewage Treatment Works- Oughterard' also in 2021 (Source: EPA Maps).

[1] https://www.fisheriesireland.ie/sites/default/files/2021-06/owenriff_lakes_and_rivers_report_2018_final.pdf

There are no wetland areas in the immediate vicinity of the project (WSI, 2025). The closest wetland area to the proposed development is Cregg Cutover East located ca. 9.85km from site (Site Code: WMI_GA935) and has been assigned an ecological rating as follows: F Rating: Unknown value – survey required.

Japanese knotweed (*Fallopia japonica*) was identified on the left riverbank, just upstream of the N59 bridge.

A Bat Survey was carried out by Ecologist Caroline Shiel from June to August 2024 along the Owenriff River. The most frequently recorded species included Soprano pipistrelle (*Pipistrellus pygmaeus*), Common pipistrelle (*P. pipistrellus*) and Leisler's bat (*Nyctalus leisleri*). Two calls of Nathusius's pipistrelle (*P. nathusii*) were recorded on 08/08/24. Daubenton's bats (*Myotis daubentonii*) were detected in low numbers throughout both nights. Walking transects conducted along the length of the Owenriff River in the study area revealed Soprano pipistrelles and Common pipistrelles feeding along the entire stretch of the river.

Tree Surveys took place in 2no. woodland areas along the Owenriff River. Woodland A identified many mature trees with developed suitable bat roosting features such as cavities and cracks, as well as multiple suitable roosting locations within the stone wall running parallel to the Owenriff River. Soprano pipistrelles were detected foraging mainly over the river but also intermittently within the woodland. Common pipistrelle and Leisler's were also recorded foraging over the river. A large number of Whiskered bats were recorded throughout the survey, indicating that there is a roost close-by. A small number of Brown long-eared bats (*Plecotus auritus*) were recorded in the woodland.

Woodland B located to the rear of Kennys Derelict pub on main street and extends north to the Owenmore River, consists of young ash trees which do not host as many potential bats roosting features. Several Soprano pipistrelles were detected foraging within the woodland. Large numbers of whiskered bats were detected throughout the survey. It is most likely that these bats are roosting either in the haybarn or else in the various stone outbuildings to the rear of Kenny's pub. This area requires further surveys in order to locate the roost.

Badger activity was noted in the open area between Woodland Area A and Woodland Area B. Badger trails were recorded heading into Woodland Area B.

2.7.5 Landscape and Visual Amenity

The surrounding land-use around the Oughterard Bridge is classified under the County Galway land use zonings CDP 2022-2028 as Water/Rivers/Streams, Transport Infrastructure, Open Space/Recreation & Amenity, Residential Existing, Town Centre and Community Facilities.

The proposed development is located ca. 150m from the existing Oughterard Bridge which is identified as a historic monument site - NIAH (30326008) and which crosses the Owenriff River.

A Landscape and Visual Impact Assessment was conducted by Eamonn Byrne Landscape Architects Ltd (EBLA) (December 2024) which concluded that "*The combination of medium sensitivity and minor magnitude suggests the significance of the effects on overall landscape/townscape character within the study area is judged to be Slight Beneficial Effect*" and concluded with respect to Visual Effects "*The significance of the visual effect of the development was judged as large adverse from 1no. viewpoint. This means the Proposed Development would cause a major deterioration to a view from a highly sensitive receptor*".

2.7.6 Water Resources

The proposed development is located within the Corrib Water Framework Directive (WFD) Catchment area and BallycuirkeLoughStream_SC_010 sub-catchment. There is 1no. Environmental Protection Agency (EPA) watercourse within the site of the Proposed Development; the Owenriff River (IE_WE_30O020200) which is directly crossed by the development and 1no. watercourse within the vicinity of the site - the CANRAWER_EAST stream which flows in an easterly direction into the Owenriff River is located ca. 110m

from the proposed development. The Owenriff River discharges to Lough Corrib ca. 1.9km downstream of the proposed works area. The Owenriff River has been assigned 'Poor' status under the Water Framework Directive (WFD) 2016-2021 and is 'At Risk' of not attaining 'Good' status by 2027. The proposed development is within the Maam-Clonbur Groundwater Body and is currently 'Not at Risk' under the WFD Groundwater Body Risk and is classified as 'Good' with respect of meeting WFD goals by 2027 (EPA Code: IE_WE_G_0006) (GSI, 2025).

There are no wells within the project site, with the closest borehole located ca. 2.5km southeast of the site. The well use is reported by the GSI (2025) as Other Use and is located to a 500m locational accuracy.

There are no designated Public or Group Drinking Water Supply Source Protection Zones within 15km of the proposed development (GSI, 2025).

2.7.7 Flood Risk

The site has been assessed in accordance with the "The Planning System and Flood Risk Management" Guidelines. As part of the sequential test, the OPW flood hazard maps have been consulted, as have the Catchment Flood Risk Assessment Maps produced by the OPW. The OPW (2025) CFRAM River Flood maps indicate Low, Medium and High probability of flooding on the Owenriff River. According to the Galway County Development Plan 2022-2028, the Owenriff River is within Flood Zone A and the surrounding lands are within Flood Zone C[2].

There are 6no. past flood events within 3km of the N59 Oughterard Bridge, 3no. of which are recurrent.

An OPW Section 50 report was completed by SLR Environmental Consulting (Ireland) Ltd (November 2024) and approved by the OPW. This report concluded '*that the soffit level of the proposed bridge is at least 772mm above the peak 1% AEP MRFS flood event in the river. This is in accordance with the OPW requirements which sets the freeboard being at least 300mm above the flood level. The proposed pedestrian bridge will be outside of the 1% AEP MRFS flood extent. Therefore, it won't have an effect on the flood levels in the river.'*

2.7.8 Cultural Heritage

2.7.8.1 National Monuments Features

The Oughterard Bridge is a NIAH feature (30326008) which is within ca. 0.15km of the proposed development.

2.7.9 Traffic & Transportation

In relation to transport, the Contractor will develop the Traffic Management Control Plan to mark relevant identified receptors so that construction impacts on them can be considered. Mitigation will include traffic management measures and the use of signage with speed restrictions and diversions.

2.7.10 Local Amenities and Other Sensitive Receptors

Local Services / Amenities (Social Infrastructure) includes a wide range of services and facilities including residential, community, recreation and religious that contribute to the quality of life.

[2] https://consult.galway.ie/ga/system/files/materials/17/G19014%20Oughterard%20FRM%2020210514.pdf

3. Legislation and Guidance

All parties, contractors and consultants working on this project shall be subject to the laws of Ireland and the various international/regional protocols and agreements to which Ireland is a party. In the event that legislation is updated the latest version shall be followed. All relevant new legislation will be followed as appropriate. This document outlines most current legislation at the date of issue. It is the responsibility of the Contractor to ensure that they are up to date with the details of the latest iterations of legislation relevant to the project throughout the duration of the contract.

The Designer should be aware of all key environmental risks and associated measures set out within this CEMP, and the final detailed design should take due cognisance of these.

The Contractor should set out the detailed CEMP in a clear format and should address all key environmental risks and associated measures. The Contractor must be aware of and comply with the legislation and guidance set out in this document, any specific planning conditions which may be associated with the proposed development, and other relevant documentation as prescribed by the Employer and planning authority.

3.1 Legislation

It should be noted that the appointed Contractor will be required to be aware of their obligations under legislation. Such legislation, includes, but is not restricted, to:

- Planning and Development Act and subsequent amendments, 2000 to 2024;
- Planning and Development Regulations 2001 to 2025;
- The Birds Directive: Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC);
- The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds;
- The Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora;
- The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. No. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015);
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- European Communities Environmental Objectives (Surface Waters) Regulations, 2009, S.I. No. 272 of 2009, as amended, 2012 (S.I. No. 327 of 2012), 2015 (S.I. No. 386 of 2015), 2019 (S.I. No. 77 of 2019), 2021 (S.I. No. 659 of 2021), 2022 (S.I. No. 288 of 2022), 2023 (S.I. No. 410 of 2023);
- European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended, 2016 (S.I. No. 366 of 2016), 2022 (S.I. No. 287 of 2022);
- European Communities (Environmental Liability) Regulations, 2008, S.I. No. 547 of 2008, as amended, 2011 (S.I. No. 307 of 2011), 2015 (S.I. No. 293 of 2015);
- European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011, S.I. No 324 of 2011;
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (S.I. No. 121 of 1994);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014), as amended 2019 (S.I. No. 233 of 2019);
- European Union (Drinking Water) Regulations, 2014, S.I. No. 122 of 2014, as amended 2017 (S.I. No. 464 of 2017), as amended (S.I. No. 286 of 2022), 2023 (S.I. No. 99 of 2023);

- Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste, as amended 2018 (S.I. No. 851 of 2018);
- Waste Management Acts of 1996 to 2021;
- The Water Pollution Acts of 1977 & 1998;
- Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended;
- The Wildlife Acts 1976 to 2023;
- Water Policy Regulations 2003, S.I. No. 722 of 2003, as amended, 2005 (S.I No. 413 of 2005), 2008 (S.I No. 219 of 2008), 2010 (S.I. No. 93 of 2010) and Amendment (No. 2) Regulations, (S.I. No. 326 of 2010) & EU Water Policy Regulations 2014 (S.I. No. 350 of 2014), 2018 (S.I. No. 261 of 2018), 2022 (S.I. No. 166 of 2022);
- Water Conservation Regulations 2008, S.I. No. 527 of 2008;
- Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016);
- Litter Pollution Act of 1997, as amended, 2017 (Bill 58 of 2017);
- Litter Pollution Regulations 1999, S.I. No. 359 of 1999);
- Waste Management (Facility Permit and Registration) Regulations 2007, S.I. No. 821 of 2007, as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015), 2019 (S.I. No. 250 of 2019), 2023 (S.I. No. 471 of 2023);
- Waste Management (Collection Permit) Regulations 2007, S.I. No. 820 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016), 2023 (S.I. No. 63 of 2023 & S.I. No. 104 of 2023);
- Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended 2010 (S.I. No. 350 of 2010);
- Environment (Miscellaneous Provisions) Act 2011, as amended 2015;
- Waste Management (Landfill Levy) Regulations 2008, S.I. No. 199 of 2008, as amended 2009, (S.I. No. 550 of 2009), 2010 (S.I. No. 31 of 2010), 2012 (S.I. No. 221 of 2012), 2013 (S.I. No. 194 of 2013), 2015 (S.I. No. 189 of 2015), 2019 (S.I. No.182 of 2019), 2023 (S.I. No. 398 of 2023), 2024 (S.I. No. 442 of 2024);
- Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000);
- Waste Management (Shipment of Waste) Regulations 2007, S.I. No. 419 of 2007;
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998);
- Waste Management (Transfrontier Shipment of Waste) Regulations 1998, as amended, 2014 (S.I. No. 861 of 2014);
- Waste Management (Tyres and Waste Tyres) Regulations 2007 (S.I. No. 664 of 2007), 2017, as amended (S.I. No. 400 of 2017) and 2018 (S.I. No. 96/2018);
- European Union Batteries and Accumulators Regulations 2014, S.I. No. 283 of 2014, as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015);
- Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008;
- Waste Management (Prohibition of Material Disposal by burning) Regulations 2009, S.I No. 286 of 2009, as amended 2013 (S.I. No. 504 of 2013), 2017 (S.I. No. 599 of 2017), 2019 (S.I. No. 684 of 2019), 2022 (S.I. No. 51 of 2022), and 2023 (S.I. No. 16 of 2023);
- European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011, as amended 2016 (S.I. No. 315 of 2016) and (S.I. No. 323 of 2020);
- European Waste Catalogue (EWC) and Hazardous Waste List 2002, 2015 and 2018;
- Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015), 2024 (S.I. No. 294 of 2024);
- Protection of the Environment Act 2003;

- European Union (Properties of Waste Which Render It Hazardous) Regulations 2015, S.I. No. 233 of 2015, as amended, 2018 (S.I. No. 383 of 2018);
- Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2002 (S.I. No. 271 of 2002), 2011 (S.I. No. 180 of 2011), 2016 (S.I. No. 659 of 2016), 2022 (S.I. No. 739 0of 2022);
- Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990 (S.I. No. 28 of 1990);
- European Communities (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007, S.I. No.147 of 2007, as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I No. 417 of 2013), 2016 (S.I. No. 2016/1628);
- The EU Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2006, S.I. No 281 of 2006, as amended, 2011 (S.I. No. 465 of 2011);
- European Communities 2008/50/EC -Ambient Air Quality and Cleaner Air for Europe (CAFE) Directive, 2008;
- Air Quality Standards Regulations 2011, S.I. No. 180 of 2011;
- EU Directive 2008/50/EC – Ambient air quality Directive European Communities (Ambient Air Quality Standards Regulations), 2022 (S.I. No. 739 of 2022);
- EU F Gas Regulations 2006, as amended, 2014, S.I. No. 517 of 2014, 2019 (S.I. No. 367 or 2019);
- Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 S.I. 174 of 1994;
- Environmental Noise Regulations 2006, S.I. No. 140 of 2006, as amended 2018 (S.I. No. 549 of 2028), 2021 (S.I. No. 663 of 2021);
- European Communities (Noise Emission by Equipment for use Outdoors) Regulations, 2001, S.I No. 632 of 2001, as amended, 2006 (S.I No. 241 of 2006);
- European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations 1996, S.I No. 359 of 1996 and 2001, S.I No. 632 of 2001);
- Local Government (Planning and Development) Act 1963 (S.I. No. 28 of 1963), as amended 1993 (S.I. No. 12 of 1993);
- European Communities Conservation of Wild Bird Regulations 1985, S.I. No. 291 of 1985, as amended, 1986 (S.I. No. 48 of 1986), 1995 (S.I. No. 31 of 1995), 1997, (S.I. No. 210 of 1997), 1998 (S.I. No. 154 of 1998), (S.I. No. 131 of 1999), 2005 (S.I. No. 716 of 2005), 2010 (S.I. No. 65 of 2010), 2011 (S.I. No. 626 of 2011), 2012 (S.I. No. 84 of 2012), 2013 (S.I. No. 281 of 2013), 2019 (S.I. No. 178 of 2019);
- Noxious Weed Act, 1936, S.I. No. 38 of 1936;
- Noxious Weed Order, 1937, S.I. No. 103 of 1937;
- Flora (Protection) Order, 2015 (S.I. No 356 of 2015), 2022 (S.I. No. 235 of 2022);
- The Forestry Act, 1946, S.I. No. 13 of 1946, as amended, 2009 (S.I. No. 40 of 2009) & Forestry Act, 2014 (S.I. No. 31 of 2014);
- Forestry Regulations, S.I. No. 191 of 2017, as amended 2020 (S.I. No. 31 of 2020, S.I. No. 39 of 2020 & S.I. No. 416 of 2020), 2023 (S.I. No. 445 of 2023);
- The National Monuments Act 1930, S.I. No. 2 of 1930, as amended, 2004 (S.I. No. 22 of 2004);
- European Union (Environmental Impact Assessment and Habitats) (Section 181 of the Planning and Development Act 2000) Regulations, 2013 (S.I. No. 403 of 2013), 2015 (S.I. No. 301 of 2015), 2019 (S.I. No. 418 of 2019);
- European Union (Environmental Impact Assessment and Habitats) (Environmental Impact Assessment) Regulations, 2018, S.I. No. 296 of 2018; and,
- Safety, Health and Welfare at Work (Exposure to Asbestos)(Amendment) Regulations 2006 (S.I. No. 386 of 2006), 2010 (S.I. No. 589 of 2010).

3.2 Industry Guidance

The Contractor should take due consideration of, and incorporate best practice guidance, including but not limited to the following:

- BS 5837/2012. Trees in relation to design, demolition and construction;
- BS 3998; 2010. Tree Work. Recommendations;
- CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors;
- CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance;
- CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry.;
- CIRIA (2015). C741. Environmental Good Practice on Site;
- CIRIA (2015). C753. The SuDS Manual;
- Environmental Protection Agency (2021). 'Best Practice Guidelines for the preparation of resources & waste management plans for construction & demolition projects';
- Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese knotweed;
- National Roads Authority (NRA) (2008). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes;
- NSAI (2017). Water quality – Guidance standard on monitoring freshwater pearl mussels (*Margaritifera margarifiera)* populations and their environment. I.E. EN 16859:2017;
- NRA (2005). Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes;
- NRA (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes;
- NRA (2006). Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes;
- NRA (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1); and,
- Sustainability & Environmental Appraisal (March 2020) LA 120 Environmental Management.

4. Project Roles and Responsibilities

For the purposes of clarity, the roles and responsibilities of the project team for the proposed development should be determined at the very outset of the Construction Stages of this project. Key roles are listed below. These are typically performed by the Client, Engineer, and Contractor as presented below. Specific details will be determined upon the Detailed Design and Contract Stage.

Table 4.1 - Roles and Responsibilities

Employer		**Planning Agents**	
The Client:	Galway County Council	The Planner:	TBC
Tel:	+353 87 4769966	Tel:	TBC
Contact:	Sara Duffy	Contact:	TBC
Employers Representative		**Civil, Structural and Environmental Team**	
The Engineer:	AtkinsRéalis	Consultant:	AtkinsRéalis
Tel:	01 8108000	Tel:	01 8108000
Contact:	Martin Jennings	Contact:	Martin Jennings and Paul O'Donoghue
Project Supervisor for the Design Process (PSDP)		**Contractor**	
The Engineer:	TBC	The Contractor:	TBC
Tel:	TBC	Tel:	TBC
Contact:	TBC	Contact:	TBC
Project Supervisor Construction Stage (PSCS)			
The Contractor:	TBC		
Tel:	TBC		
Contact:	TBC		

4.1 The Client/Employer

Galway County Council will be responsible for ensuring that competent parties are appointed to undertake the construction and that sufficient resources are made available to facilitate the appropriate management of risks to the environment.

4.2 Environmental Manager

An Environmental Manager will be appointed by the Contractor to ensure that the CEMP is effectively implemented. The Environmental Manager will be a suitably qualified, competent and experienced professional that would perform the necessary tasks, review environmental procedures and consult with the

members of the construction team and stakeholders as required. The Environmental Manager will be responsible for:

- Ensuring that the CEMP and all relevant documents such as environmental control plans are developed, implemented and maintained on site;
- Updated the CEMP to address any subsequent planning conditions relevant to the proposed development;
- Ensuring compliance with the Conditions of the Planning Permission and any other relevant permits/ consents required;
- Ensuring that construction occurs in accordance with the relevant environmental requirements and that such compliance is adequately recorded and documented;
- Conducting regular environmental inspections and compiling an environmental compliance report on a monthly basis;
- Attending site and stakeholder meetings as required;
- Keeping up-to-date with relevant environmental best practice and legislative changes;
- Ensuring all staff have undertaken adequate environmental inductions, awareness briefings and training;
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are recorded and reported in an appropriate manner.

4.3 Construction Director

The Construction Director will be responsible for the overall execution and organisation of all environmental related activities, as appropriate. Some responsibilities of the Construction Director will comprise the following:

- Overall responsibility for the implementation of the CEMP;
- Allocating the correct resources in order to ensure the successful implementation of the CEMP; and,
- Assisting in the management review of the CEMP for suitability and effectiveness.

4.4 Construction Manager

The Construction Manager is directly responsible to the Construction Director in assisting with the successful execution of the proposed development. The responsibilities of the construction manager in respect of the CEMP comprise the following:

- To report to the Construction Director on the on-going performance and development of the CEMP;
- To discharge his/her responsibilities as per the CEMP; and,
- To support and augment the Construction Management Team through the provision of adequate resources and facilities for the duration of the implementation of the CEMP.

4.5 Ecological Clerk of Works

The Ecological Clerk of Works (ECoW) will be appointed by the contractor to ensure that the ecological plan is effectively implemented. The ECoW will be a suitably qualified, competent and experienced professional that would perform the necessary tasks, review ecological procedures and consult with the members of the construction team and stakeholders as required. The ECoW will be a full member of a relevant environmental institute, such as the Chartered Institute of Ecology and Environmental Management (CIEEM), the Institute of

Environmental Management, or equivalent and have demonstrable experience with overseeing construction in European sites. The ECoW will be responsible for:

- Monitoring the construction works and identifying any additional or refined mitigation measures (i.e. ‘adaptive management measures required), in relation to any ecology;
- Reporting the findings of monitoring, including any adaptive management measures recommended and the effectiveness of same;
- Delivering site induction and training on ecological aspects to all construction personnel prior to commencement of construction activities; and,
- The implementation of ecological mitigation measures.

5. Environmental Management Procedures

5.1 General

The Contractor will be required to have a recognised environmental management system such as ISO 14001:2015 or be able to demonstrate that they are actively working towards implementing such a system.

The works Contractor will undertake the works in accordance with the provisions of the CEMP. The CEMP will be updated by the works Contractor to address any subsequent planning conditions relevant to the proposed development and will be reviewed by the Employer and/or the Employer's Representative. The Contractor will review and update the CEMP as appropriate and shall issue an updated CEMP. A record of the review and any recommendations will also provide (for review and approval by the Employer and/or the Employer's Representative) Environmental Control Plans (ECPs), which will be maintained and updated in accordance with the CEMP. ECPs will include (if applicable), but will not be restricted to:

- Air Quality Control Plan;
- Construction Noise and Vibration Control Plan;
- Pollution Prevention Control Plan;
- Water Resources and Energy Use Control Plan;
- Ecological Control Plan;
- Light Pollution Control Plan;
- Archaeological and Cultural Control Plan;
- Traffic Management Control Plan;
- Contamination Land Control Plan; and,
- Soil Erosion and Sedimentation Control Plan.

Guidance on the development of the Control Plans is located in Section 7 of this document.

5.2 Environmental Policy

Contractors will have an environmental policy dated and signed by the most senior person in the company. The policy shall:

- Be appropriate to the nature, scale and environmental impacts of the organisations activities, products and services;
- Include a commitment to continual improvement in environmental performance;
- Include a commitment to comply with all applicable legislation and with other requirements to which the organisation subscribes which relate to its environmental aspects;
- Provide a framework for setting and reviewing objectives and targets;
- Be documented, implemented and maintained;
- Be communicated to all persons working for or on behalf of the organisation; and
- Be available to the public.

5.3 Environmental Aspects

Contractors are expected to use a qualitative approach to identify and evaluate potential environmental aspects along with any controls to prevent or mitigate environmental damage. A simple risk matrix (as follows) facilitates quick reference and assignment of risk levels for each environmental aspect:

- Extreme/serious risk;
- High risk;
- Moderate risk; and,
- Low risk.

All environmental aspects rated as High or Extreme/Serious will be classified as significant and will require control or mitigation measures to manage the risk. All environmental aspects covered by a legal requirement, for example an Environmental Permit condition will also be classified as significant even if the risk is low or moderate.

Table 5.1 – Example of Qualitative Risk Matrix

					Probability				
Severity	**People**	**Assets**	**Environment**	**Reputation**	**Impossible / Rare**	**Improbable / Possible**	**Probable / Likely**	**Very Likely / Often**	**Certainty/ Frequent**
Catastrophic	Multiple fatalities or permanent total disabilities	Extensive damage	Massive effects	International impact				Extreme / Serious Risk	
Severe / Major	Single fatality or permanent total disability	Major damage	Major effect	National impact		High Risk			
Critical / Moderate	Major injury or health effects	Local damage	Localized effect	Considerable impact					
Marginal / Minor	Minor injury or health effects	Minor damage	Minor effect	Minor impact		Moderate Risk			
Negligible / Insignificant	Slight injury or health effects	Slight damage	Slight effect	Slight impact	Low Risk				

The Contractor shall record the results of the qualitative risk analysis in an Aspects and Impacts Register (Table 5.2).

Table 5.2 – Example of Aspects and Impacts Register

Environmental Aspect	Environmental Impact	Risk Rating	Control / Mitigation Measures	Risk Rating After Control
Use of fuel storage tanks on site.	Potential contamination of water and land.	High Risk	Double skinned tank, bunding, location on hard standing, emergency spill procedure and equipment and training.	Moderate Risk.

5.4 Training, Awareness and Competence

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

A site induction will be provided to all construction staff before they commence work on site. Where appropriate, the Contractor will identify specific training needs for the construction workforce and will ensure that appropriate training requirements are fulfilled. A baseline level of environmental awareness will be established though the site induction programme. Site inductions will cover the following as a minimum:

- Introduction to the Environmental Manager;
- The requirements of the CEMP and consequences of non-compliance;
- The requirements of due diligence and duty of care;
- Identification of environmental constraints and potential impacts of the work;
- Procedures associated with incident notification and reporting including procedures for dealing with damage to the environment; and,
- The benefits of improved environmental and sustainability performance; and the potential consequences of departure from specified procedures, work instructions and method statements.

5.5 Meetings

The Environmental Manager will be responsible for arranging and holding monthly meetings with the Employer and/or the Employer's Representative. The Environmental Manager will develop and distribute minutes on monthly meetings accordingly.

5.6 Monitoring and Inspections

For the duration of the contract, the environmental performance of the Contractor will be monitored through site inspections and audits. The programme for monitoring, inspections and audits shall be specified in the contract. The Contractor shall develop, implement and maintain an Environmental Inspections and Monitoring Plan.

Records of all inspections carried out will be recorded and all actions will be closed out in a reasonable time. If additional monitoring and inspections are required due to any subsequent planning conditions, these will be added to the CEMP.

5.6.1 Monitoring

Mitigation and monitoring will be carried out so that construction activities are undertaken in a manner that does not give rise to significant negative effects.

The results of all environmental monitoring activities will be reviewed by the Environmental Manager on an ongoing basis to enable trends or exceedance of criteria to be identified and corrective actions to be implemented as necessary.

5.6.2 Inspections

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

5.6.2.1 Daily Inspections:

The daily inspections will include, but not be limited to, checking that:

- The site boundary is marked out and respected;
- All waste is appropriately stored and segregated;
- Waste skips are covered to prevent wind-blown litter;
- Drip trays are in place for all stored equipment and plant;
- All chemicals/fuels are stored with appropriate containment/bunds/cover;
- Construction noise is within permitted limits and does not create a nuisance;
- Dust does not create a nuisance; and,
- Fencing/hoarding is secure.

5.6.2.2 Weekly Inspections

The inspections will include, but not be limited to confirming that:

- Daily checklists have been completed;
- Waste storage areas have been checked and there is no build-up of waste materials;
- Spill kits have been checked and contain all relevant materials;
- The performance of all pollution control equipment has been checked and the equipment is working effectively;
- Noise reduction/monitoring equipment has been checked and is operating effectively;
- Septic tanks are not overfull/discharging; and,
- Special control measures identified in Permit/Planning Conditions and CEMP are adhered to.

5.7 Nonconformity and Corrective and Preventative Action

The Contractor will establish, implement and maintain procedures to deal with actual and potential non-conformities and for taking corrective and preventative action.

Non-conformities may be identified through:

- Internal contractor audits;
- Audits by the Employer and/or the Employer's Representative;
- Audits undertaken by external certification bodies;
- Audits undertaken by regulatory authorities; and,
- General observations.

The Contractor procedures will define the requirements for:

- Identifying and correcting non-conformities;
- Mitigating the environmental impacts of non-conformities;
- Investigating non-conformities including identify root causes and implementing appropriate actions to avoid their reoccurrence;
- Evaluating the need for actions to prevent non-conformities and implementing appropriate actions designed to avoid their reoccurrence;
- Setting realistic timeframes for undertaking effective corrective and preventative actions;
- Recording the results of corrective and preventative actions taken; and,
- Reviewing the effectiveness of corrective and preventative actions.

All actions identified should be appropriate to the nature and magnitude of the issue and the environmental impacts encountered.

5.8 Reporting

The Contractor will be required to submit a report, the frequency to be agreed with the Contractor and Employer and/or the Employer's Representative to the Employer and/or the Employer's Representative for review and approval. The report shall address the following as minimum:

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

5.9 Environmental Records

The Contractor shall maintain records of all environmental documentation including monitoring, test results, method statements and plans. All records will be kept up-to-date and be made available for audits, inspections

and periodical reporting. The Contractor will maintain the following environmental records (as a minimum) that will be made available for inspection to the Employer and/or the Employer's Representative and the relevant authorities if required:

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

6. General Requirements

The Contractor will be legally required to ensure compliance and to avoid and/or reduce significant adverse effects that have been identified where practicable. Where the Contractor intends to vary the methodologies and working areas outlined herein and/or defined in the granted planning consent and associated conditions that may be granted, it would be the responsibility of the Contractor to obtain the relevant licenses, permits and consents prior to implementing any such changes.

6.1 Good Housekeeping

The Contractor will employ a 'good housekeeping' policy at all times. This will include, but not be restricted, to the following:

- General maintenance of working areas and cleanliness of welfare facilities and storage areas;
- Provision of site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities etc;
- Maintain all plant, material and equipment required to complete the construction work in good order, clean and tidy;
- Keep construction compounds, access routes and designated parking areas free and clear of excess dirt, rubbish piles, scrap wood, etc. at all times;
- Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) will be provided at the boundaries of the working areas;
- Provision of adequate welfare facilities for site personnel;
- Installation of appropriate security, lighting, fencing and hoarding;
- Effective prevention of oil, grease or other objectionable matter being discharged from the working area;
- Provision of appropriate waste management at each working area and regular collections to be arranged;
- Excavated material generated during construction will be reused on site as far as practicable and surplus materials/soils shall be recovered or disposed of to a suitably authorised waste facility site;
- Effective prevention of infestation from pests or vermin;
- No discharge of site run-off or water discharge without agreement of the relevant authorities; and,
- Maintenance of public rights of way, diversions and entry/exit areas around working areas for pedestrians and cyclists where practicable and to achieve inclusive access.

6.2 Site Compound

It is envisaged that the proposed site compound for the works will be set up in one of the fields along Station Road (south-west of the site) – subject to confirmation.

Materials and plant required for the works are anticipated to be stored in this compound. All storage areas shall be appropriately bunded where required. Fuelling of plant is anticipated to be in a designated fuelling area within the compound. The compound will provide for the following:

- Welfare/office facilities for site staff.
- Plant/machinery parking/storage area.

- Fuel storage/refuelling area.
- Segregated waste area.
- Construction staff parking.

A site compound will be set up before commencement of the works. The site compound will be located at least 50m away from the Owenriff River. It is envisaged that the site compound will be setup in a field along Station Road as shown in Figure 6-1 which is ca. 300m south-west of the site. All plant and equipment will be maintained, refuelled, and stored at the compound location. Oil will be stored in an appropriately contained bunded facility.

The site compound is a contractor designed element. If the site compound needs to accommodate a temporary set-down area for the footbridge and a turning circle for heavy goods vehicles, then the required area of the site compound is envisaged to be ca. 4500m^2. For this size, ca. 1300m^3 of hardcore/gravel would be used to build up temporary access roads, paths and working area.

The site compound should be located away from any identified environmental sensitive receptors so as to avoid potential impacts to the environment and the general public.

The final proposed site compound location will be subject to client approval, and will be the responsibility of the appointed Contractor.

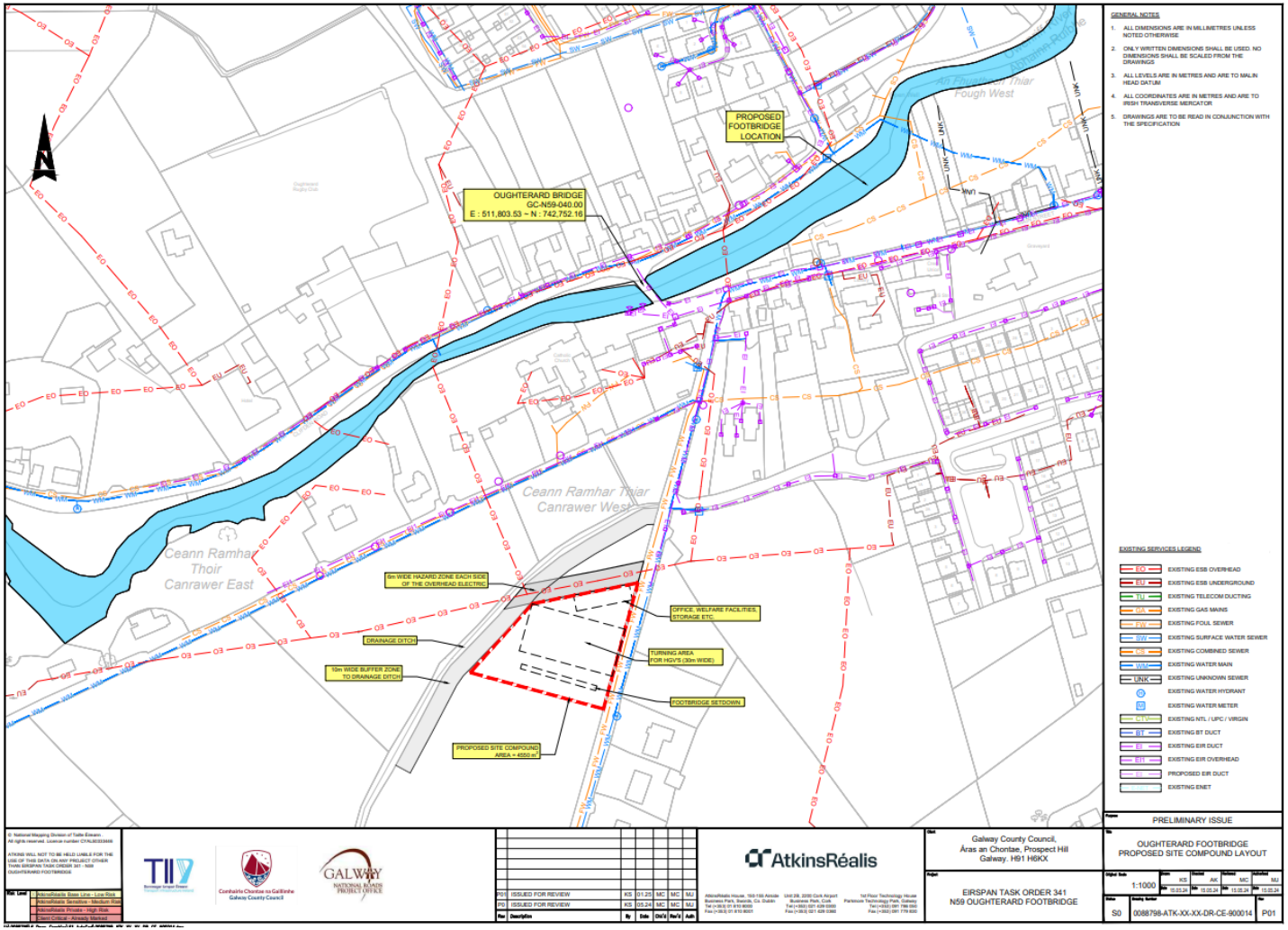

Figure 6-1 - Location of Site Compound – Red dotted line

6.3 Hours of Working

6.3.1 Core Working Hours

The timing of construction activities, core working hours and the rate of progress of construction works are a balance between efficiency of construction and minimising nuisance and significant defects. The core construction working hours for the proposed development will be:

- Monday to Friday: 08:00 to 18:00.
- Saturdays: 09:00 to 13:00,
- Sundays & Bank Holidays: No works activities shall take place on site.

6.3.2 Start-up and shutdown

The Contractor may require a period of up to one hour before and one hour after core working hours for start-up and shutdown activities in working areas. Activities permitted may include deliveries and unloading of materials, movement of staff to their place of work, maintenance and general preparation works. The use of plant machinery likely to cause disturbance, will not be permitted outside of the core working hours.

6.3.3 Additional working hours

It may be necessary in exceptional circumstances to undertake certain activities outside of the construction core working hours. Any construction outside of the construction core working hours will be agreed by the Contractor in advance with Galway County Council and scheduling of such works shall have regard to nearby sensitive receptors.

In the case of work required in an emergency or which if not completed would be unsafe or harmful to workers, the public or local environment, Galway County Council will be informed as soon as reasonably practicable of the reasons and likely duration and timing (outside of the core working hours).

6.4 Security

Security will be the responsibility of the Contractor who will provide adequate security to prevent unauthorised entry to or from the site. The following measures may be used to prevent unauthorised access:

- Install CCTV and security systems where required;
- Consult with neighbouring properties and local crime prevention officers including Galway County Council and An Garda Siochana on site security matters where required;
- Prevent access to restricted areas and neighbouring properties by securing equipment on site such as ladders and scaffolding; and,
- When there is no site activity, close and lock site gates and set appropriate site security provisions as required.

6.5 Hoarding and Fencing

A site boundary in the form of hoarding or fencing will be established around each of the working areas before any significant construction activities commences in that working area. The hoarding/fencing shall provide a secure boundary to what can be a dangerous environment for those that have not received the proper training and are unfamiliar with construction operations.

Site hoarding also performs am important function in relation to minimising nuisance and effects including:

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

6.6 Services and Utility

Site services shall be installed as part of the works. Working areas will be powered by mains supply or diesel generators where an electrical supply is not available.

The Contractor will be responsible for undertaking their own surveys to establish full extent of underground services prior to the commencement of construction to support any surveys already undertaken as part of early design work and statutory consent applications.

6.7 Lighting

The lighting design has been developed with the following principal considerations:

- Provide adequate illumination to contribute towards the safe use of the proposed footbridge and approach paths.
- To minimise the impact of lighting on bats in the local environment, and on Freshwater Pearl Mussel or fish in the Owenriff River.
- Minimise light pollution and visual glare to the surrounding neighbourhood - contain the lighting within the site.
- Provide a high-quality public realm space.

The following lighting is proposed:

- Luminaires integrated into the top rail of the east parapet of the proposed footbridge, the top rail of the north parapet on the proposed north ramp, the north handrail on the proposed north steps, and the top rail of the pedestrian fence on the east side of the proposed south approach path.
- Belisha beacons / 8m tall lighting columns each side of the proposed zebra crossing on the N59 Clifden Road.
- 6m tall lighting columns each side of the proposed zebra crossing on Carrowmanagh Rd.

Directional downlighting will be used to avoid light trespass into the environment. Modelling of the proposed lighting plan was carried out by ASD lighting and found that the maximum light spill to the river surface will be less than 1 lux. Characteristics such as light spectrum, UV content, intensity, dimming etc. will be specified in accordance with current best practice and design guidance (e.g., Bat Conservation Trust & Institute of Lighting Professional Guidelines (2018); Emery (2008); Emma Stone (2014) University of Bristol / Bat Conservation

Trust; Responsible Outdoor Lighting at Night (ROLAN) guidelines, etc.). Galway CC and the ecological specialist will have final review of the lighting design to ensure above listed guidance is followed during detailed design stage.

6.8 Reinstatement of Working Areas on Completion

The Contractor will reinstate all working areas as work proceeds during construction. All plant, equipment, materials, temporary infrastructure and vehicles will be removed at the earliest opportunity and the surface of the ground restored as near as practicable to its original condition.

On completion of the construction works, the Contractor will ensure that all waste and polluting material is removed from the site and is disposed of using appropriately authorised contractors. The Contractor shall, as appropriate, undertake visual and ecological rehabilitation of the site compound and other areas no longer to be used by the Contractor. Following site clearance and rehabilitation the Employer or Employer's Representative will undertake a final inspection of the site. Any environmental issues identified during the final inspection will be raised with the Contractor. Mitigation measures and timeframes for completion will be agreed between the Contractor and the Employer's Representative in line with agreed procedures prior to final sign off.

6.9 Health and safety

The Contractor will ensure all relevant health and safety, fire safety and security requirements are in place prior to the commencement of construction and in accordance with the relevant legislation requirements in addition to the specifications of Galway County Council.

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

7. Environmental Management and Controls

It should be noted that this section provides a summary of minimum requirements that should be developed by the Contractor when preparing the CEMP. The Contractor is required to ensure that all mitigation measures given in the Natural Impact Statement for the proposed development are incorporated in the CEMP.

7.1 Waste Management

This section identifies the potential types of waste which may arise from construction and provides guidance on the management, control and disposal of waste.

7.1.1 Risk Identification

Contractors will undertake a qualitative waste management risk assessment or appraisal prior to the commencement of construction activities. An example assessment is shown is Table 7.1.

Table 7.1 – Example of Waste Management Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan with the location of all adjacent housing/commercial centres, schools and educational establishments, agricultural land, protected ecological habitats and species, and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as waste storage areas.
02	Identify the construction activities and sources that may result in waste production and waste storage, segregation and disposal requirements.	These could include excavations, chemical and materials use, waste storage and bulking areas etc,
03	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage waste: Prevent - Do not generate the waste in the first place. Re-use – Can you re-use without treatment? Recycle – Make sure that wastes are properly segregated to aid recycling. Disposal with energy recovery. Disposal without energy recovery.

7.1.2 Waste Management

Contractors will develop, implement and maintain a Waste Management Plan that is in compliance with Galway County Development Plan 2022-2028, and EPA (2021) *'Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects'*. The plan should include but not be restricted to the mitigation measures below (Table 7.2).

Table 7.2 –Waste Management Mitigation Measures

Activity	Mitigation Measures
General	An approved person, such as a site/contract/resource manager, will be given responsibility for good site practices and control, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site. Contractors will apply the waste prevention principles of the waste management hierarchy: ▫ Prevent – Do not generate the waste in the first place. ▫ Re-use – Can you re-use without treatment? ▫ Recycle – Make sure that wastes are properly segregated to aid recycling. ▫ Disposal with energy recovery. ▫ Disposal without energy recovery. The Contractor will ensure that all construction staff are trained in good waste management practice and chemical handling procedures.
Collection and Storage of Waste	Contractors will provide designated waste storage areas for the bulk storage of waste prior to removal off-site. A site plan showing the designated site will be provided and approved by the Construction Manager. Only appropriately authorised contractors and sites will be used for the transport and disposal of waste. The Contractor will provide adequate facilities for the collection and storage of waste material including litterbins and waste skips. Waste containers/skips/bins will be provided with nets or lids to prevent waste being carried around by scavengers or by the wind. Waste containers will not be overfilled. Appropriate measures will be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. Industrial and construction waste including redundant hazardous equipment, tyres, used oil cans/drums etc will be separated and put into segregated bins for removal and disposal by an appropriately authorised contractor.
Waste Reduction and Sustainability	Good management and control can prevent the generation of significant amounts of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Purchase materials in the quantity required for the project to minimise unused leftovers. Scheduling and planning the delivery of materials will be carried out on an 'as needed' basis to limit any surplus materials. Purchase materials that do not use excessive amounts of packaging to minimise the quantity of used packaging for subsequent disposal/processing. Segregate and store different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.

	Collect and segregate waste metals including redundant plant and equipment, metal construction materials and cans. Recycle unused chemicals or those with remaining functional capacity.
Disposal of Wastes	All waste will be disposed of at approved sites using appropriately approved contractors - The Contractor must provide copies of valid EPA Waste licenses and Local Authority Waste Permits (including those relating to their subcontractors or brokers, where applicable) for collection and waste treatment/disposal/export facilities. Records of waste disposal, recycling and recovery will be maintained. The contractor will provide sufficient secure waste disposal points and regular collection for disposal. No waste will be disposed of or buried on site. Dumping of waste, including roadside dumping and filling on land not within a registered landfill area is prohibited. Works that involve onsite filling with material other than virgin excavated natural material is encouraged where material is potentially suitable. Burning any waste on site is prohibited. Divert construction, demolition and land clearing debris from landfill disposal. Redirect recyclable recovered resources back to manufacturing process. Redirect reusable materials to appropriate sites. Waste will be segregated in an onsite recycling centre and those components that are recyclable sent to appropriate facilities. Consider recycling cardboard, metal, brick, concrete, plastic, and clean wood. Identify approved haulers and recyclers to handle the designated materials. All non-recyclable waste will be disposed of by an appropriately authorised waste contractor. The contractor will follow approved procedures for the classification, sampling, transport and disposal of hazardous waste.
Storage and Stocking of Material	Temporary stockpiling of native soils and imported materials onsite will require careful management in order to prevent the release of sediment into drainage ditches (and receiving water courses, and any temporarily exposed groundwater (in the event that groundwater is encountered). Stockpiled materials will not be located immediately adjacent to or onsite drainage ditches, or any temporarily exposed groundwater (in the event that groundwater is encountered). Stockpiled materials will be covered as required to prevent it spilling over/blowing onto areas of environmental interest or semi-natural vegetation outside the agreed lands. Stockpiles of materials will be kept to an absolute minimum, and where possible, stockpiled for as short a time as possible prior to use. Any stockpiled materials will be stored in low mounds where possible. Slopes of material will be stable, and the side slopes compacted down and stabilised, with regular checks by the Contractor. The Contractor will examine the risk arising from the storage areas and identify as appropriate the need for mitigation measures at the toe of slopes to reduce silt transport from areas of stockpiled material. Stockpiles of materials not suitable for onsite re-use will be removed as soon as is practicable in accordance with applicable waste management legislation. The Contractor will comply with best practice when sourcing imported materials for site works, including NRA (2006) A Guide to Landscape Treatments.

	Imported material will be from a reputable source who can confirm that it has been screened for potential presence of invasive species.

7.2 Air Quality

Construction activities have the potential to impact on air quality through the creation of dust and emissions to air from vehicles and plant, along with activities including infilling of soil, excavation of trenches, stockpiling and movement of materials. This section identifies the potential causes of air pollution which may arise from construction and provides guidance on the management and control of emissions from site.

7.2.1 Risk Identification

Contractors shall undertake a qualitative risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment for air quality is shown in Table 7.3.

Table 7.3 – Example of Air Quality Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all adjacent housing/commercial centres, schools and educational establishments, agricultural land and other potential ecological and water receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as material storage areas, re-fueling points and haul routes.
02	Identify the construction activities and sources of pollution that may result in emissions to air.	These could include excavations, concrete use, transport, materials storage, traffic management etc.
03	Evaluate the risk of the construction activities resulting in emissions to air.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm pollution would cause to a particular receptor. For example, the impact of dust in a populated urban area would be significantly greater than dust in an unpopulated rural area.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: Remove the risk (different construction methods/activities). Control the source (modify construction methods, covers for storage areas). Protect the receptor (provide hard standing and covering for compounds/storage areas, filter, control, contain emissions, ensure appropriate environmental permits are in place). Put emergency procedures in place.

7.2.2 Air Quality Management Plan

Contractors should develop, implement and maintain an Air Quality Management Plan. The plan should include but not be restricted to the mitigation measures below (Table 7.4).

Table 7.4 –Air Quality Mitigation Measures

Activity	Mitigation Measures
General	The Contractor is required to implement the 'standard mitigation', as stated in the Transport Infrastructure Ireland (TII), (formerly the NRA)) (2011). Guidelines for the Treatment of Air Quality during the Planning and Construction of National Roads Schemes. Standard measures should be taken which will minimise dust from demolition and construction activities and tree felling, at a minimum adhering to standard good practice which includes the Building Research Establishment (BRE) document entitled 'Control of Dust from Construction and Demolition Activities' and Institute of Air Quality Management document 'Guidance on the Assessment of Dust from Demolition and Construction' (IAQM, 2014).
Dust Suppression and Odour Management	Minimise use of internal site roads to limit the ground area that is disturbed. Avoid excessive vehicular traffic and movement. Locate haul routes away from sensitive receptors. Pave heavily used areas. Plan vehicle movements to minimise duration of dust generation. Stockpiles of fine material such as sand, topsoil material, cement, excavated material etc. will be covered / protected from wind. Use dust suppression systems such as a rotary water atomizer (or equivalent) to dampen down stockpiles and construction roads etc. during dusty conditions and to control dust from site-based activities. Due consideration should be given to use of appropriate water resources for use in dust suppression, see Section 7.4. Dust generating activities will cease during excessively windy periods. Construct dust screens/wind breaks as necessary. Fence off work areas with geotextile type liners. Encourage progressive rehabilitation of disturbed land or stockpiles by establishing temporary or permanent vegetation. Contractors will regularly inspect stockpiles; exposed work areas and construction works practices to ensure compliance. Vehicle speeds will be restricted on un-surfaced roads and tracks to less than 30km/hr to minimise dust. Cover and/or maintain appropriate freeboard (+ 0.3m) on trucks hauling any loose material that could produce dust when travelling.
Traffic, Vehicle, Plant and Equipment Emissions	Produce, implement and maintain a comprehensive Traffic Management Plan (TMP). Undertake regular construction vehicle, plant and equipment maintenance. Undertake regular maintenance on particulate traps/filters on trucks. Implement minimum exhaust requirements in line with national standards on equipment (including temporary power generators) and vehicles. Switch plant and vehicles off when not in use. Use public/shared transportation for workers.

Activity	Mitigation Measures
Other emissions	No fires will be allowed on the construction site. Burning of waste materials on site will be prohibited. Limit volatile substance emissions/fine particle releases. Local sourcing of construction materials such as the recycling of material won on excavations for reuse on site. Reduce the idle times by providing an efficient material handling plan that minimises the waiting time for loads and unloads. Reducing idle times could save up to 10% of total emissions during construction phase. Turning off engines when not in use for more than five minutes. This restriction will be enforced strictly unless the idle function is necessary for security or functionality reasons; and, Regular maintenance of plant and equipment, and technical inspection of vehicles to ensure they will perform the most efficiently.

7.3 Construction Noise and Vibration

Construction activities can produce a significant amount of noise and vibration with the potential to impact adversely on a range of receptors. This section identifies the potential causes of noise and vibration which may arise from construction and provides guidance on management and control.

7.3.1 Risk Identification

An example risk assessment is shown in Table 7.5.

Table 7.5 – Example of Noise and Vibration Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan the location of all nursing homes, housing/commercial centres, schools and educational establishments, agricultural land and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for noisy activities or activities likely to cause vibration such as generators, compressors, haul routes and drilling.
03	Identify the construction activities that may affect the receptors identified.	These could include excavations, dewatering, traffic movements, warning sirens, use of machinery and plant etc.
04	Evaluate the risk of the construction activities impact on receptors.	Assess the likelihood of an activity causing noise pollution. Assess the significance of the noise impact on particular receptors. For example, the impact of noise from construction activities adjacent to housing would be significantly greater than the impact of noise in an uninhabited rural area.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods, substitution of materials for less noisy options).

Risk Assessment	Example Procedure
	2. Control the source (modify construction methods, provide adequate baffling). 3. Protect the receptor using noise barriers, screening etc! 4. Put emergency procedures in place.

7.3.2 Noise and Vibration Management Plan

Contractors should develop, implement and maintain a Noise and Vibration Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.6).

Table 7.6 –Noise and Vibration Mitigation Measures

Activity	Mitigation Measures
General	The contractor shall comply with the contents and recommendations of BS 5228 – 1:2009 + A1:2014: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise & Part 2: Vibration. The contractor shall also comply with the contents and recommendations of BS 6471:2008: Guide to Evaluation of Human Exposure to Vibration in Building, Part 1: Vibration Sources other than Blasting. The contractor shall ensure that each item of equipment complies with the noise limits quoted in the European Commission Directive 2000/14/EC. As far as practical construction methods that are likely to cause high levels of noise and vibration e.g. concrete and excavation work, will be restricted to daytime hours only. Approval from the local authority should be obtained prior to undertaking work at night. Local residents and people likely to be affected by noise and vibration should be informed prior to the commencement of work. Access roads to the site will be positioned such that vehicular movements cause minimum disturbances to any residential properties (if possible). Replace noisy plant with less noisy alternatives, shield/screen noise making plant especially during the evening and night periods or provide plant which is specifically designed with noise inhibitors such as generators and compressors with silencers and muffled jack-hammers. Construct a solid barrier around the generators if required. Use plant in accordance with manufacturer's specifications. Orientate machinery away from noise sensitive residential areas. Where machines are fitted with engine covers these shall be kept closed. Ensure all stationary and mobile equipment, construction plant, machinery and vehicles are well maintained on a regular basis, and in good working order. Delivery routes used by trucks and lorries should avoid residential areas to prevent likely vibration impacts from construction traffic to and from the site. Vibrations must be minimised at any neighbouring premises. Residents of any neighbouring premises should be warned of possible vibrations prior to the commencing the activity, in the event that this is an identified risk. Complaints will be responded to within 24 hours and mitigation measures checked and improved within 48 hours. Should a substantiated noise complaint be received by the Contractor, an appropriate noise monitoring campaign shall be instigated by the Contractor to determine the noise source. If

Activity	Mitigation Measures
	necessary, appropriate noise mitigation measures, such as noise barriers, will be implemented.

7.4 Prevention of Soil and Water Pollution

Construction activities have the potential to cause pollution to groundwater and/or soils and surface water. This section identifies the potential causes of pollution which may arise from construction and provides guidance on the management and control.

7.4.1 Risk Identification

Contractors shall undertake a qualitative pollution risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is presented in Table 7.7.

Table 7.7 – Example of Soil and Water Pollution Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark up on a site plan with the location of all water courses, surface water features, boreholes, field drains, ecologically sensitive areas, surface and foul drainage systems and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as chemical/fuel storage areas, refuelling points, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example, water courses, ecologically sensitive areas.	Undertake baseline assessment of water, ground and surface water quality prior to construction. Establish monitoring regime during construction as appropriate. Refer to Planning Environmental Considerations Report.
03	Identify the construction activities and sources of pollution that may affect the water receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff, chemical/fuel storage, wash down areas, fuelling areas and concrete use.
04	Evaluate the risk of the construction activities polluting the identified water receptors.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm pollution would cause to a particular water receptor. For example, the impact of polluting a water receptor used for potable water would be significantly greater than the pollution of a foul water system.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities).

Risk Assessment	Example Procedure
	1. Control the source (change location, modify construction methods, provide adequate bunding for fuel and other storage areas, install measures such as silt fences or ditches to control runoff). 2. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 3. Put emergency procedures in place.

7.4.2 Pollution Prevention Management Plan

Contractors should develop, implement and maintain a Pollution Prevention Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.8).

Table 7.8 –Soil and Water Mitigation Measures

Activity	Mitigation Measures
General	Ensure that appropriate permits/consents are in place prior to commencing any dewatering activities (if required). Silt mats, fences and wattles will be implemented to prevent any silt from entering the watercourse. Regular removal of silt trapped behind the silt fences will be carried out. Installation of Continuous Turbidity Meters upstream and downstream of the proposed works. Background turbidity levels to be recorded 2 weeks before commencement of the works. Sample collections as required, such as for wastewaters and discharges to the ground and surface waters to facilitate characterisation of contaminants in the event of a leakage or spill that may impact soil or groundwater quality. Appropriate sampling of discharges, if required, to include key parameters to ensure discharges meet appropriate criteria. Carry out regular inspections/audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and sanitary/welfare facilities. Avoid impacting adjacent sites by ensuring all contractors activities, equipment and waste storage is confined to the approved site boundary. Where waste waters do not meet approved quality criteria they should be contained and disposed of via an approved disposal route. Ensure regular and controlled disposal of waste using appropriately authorised contractors.
Storage and handling of hazardous substances	Hazardous substances include, but are not limited to human excrement, fuel, lubrication oils, hydraulic and brake fluid, acids, paints, anti-corrosives, pesticides, detergents, cement etc. All hazardous material, including chemicals and fuels, will be stored at a designated site. Contractors should minimise the amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards and use materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. Contractors will keep a list of all hazardous substances present on site and the MSDS for these substances shall be readily available.

Activity	Mitigation Measures
	Hazardous wastes are the by-products and wastes associated with the use of hazardous substances as well as potentially hazardous items such as spent batteries, used oil filters, light bulbs, circuit boards, sharp objects etc. which require special collection and handling. Each receptacle containing dangerous goods will be marked with the correct technical name of the substance it contains. All markings shall be legible and in appropriate language. Incompatible materials will not be placed in common containment. All refuelling and fuel drum loading operations will take place at a designated site and the ground under the refuelling and fuel drum loading areas will be protected against pollution caused by spills and/or tank overfills. Fill nozzles will be kept within the bunded area when not in use and padlocked. Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances. Bunds should typically be provided at refuelling stations, under any container with hazardous substances (oil, fuel, paints, solvents etc.) or any piece of machinery (i.e. generators) which may leak fuel, lubricants or hydraulic fluids. It is good practice to provide drip trays under construction vehicles prone to leaking lubricants/and oil. Locate storage areas away from drains/trenches/wastewater collection devices. All hazardous liquids will be stored in an impervious bund area where the volume of the storage bund is >110% of the largest storage tank contained within the bund until collected for off-site disposal by an approved waste contractor at an approved site. All flammable liquids will be stored under cover and in well ventilated areas. No electrical equipment will be used within 10 metres of the storage area. Cylinders of compressed gas or flammable gases will be stored upright in secure racks and out of direct sunlight or heat source. The contractor will ensure that there is adequate fire-fighting equipment at the fuel and hazardous materials storage area. Firefighting equipment should be well maintained and tested periodically in line with manufacturers recommendations. All contractors handling hazardous materials will keep appropriate spill cleanup material/spill kits adjacent to storage and maintenance areas and take immediate action to contain/clean up the spill using sand/suitable absorbent material. Contaminated soil, rags and other clean up material will be disposed of via an approved waste contractor at an approved site. Spill kits will be inspected on a regular basis. Used or waste fuel or other waste chemicals will be stored in a bunded area until collected for off-site disposal by an approved waste contractor at an approved site. Waste material or water containing waste chemicals such as thinners, oil, and mineral spirits will not be pumped or disposed of into storm water drains, sanitary sewers or into the ground. The contractor will comply with all permit conditions, environmental regulations and legislation with regards to the safe storage and handling of hazardous substances. The contractor is responsible for the training of all personnel on site who will be handling hazardous materials about its proper use, handling, disposal and spills procedures and to provide all staff with appropriate personal protective equipment. All plant and machinery will be serviced before being mobilised to each work areas; No plant maintenance will be completed at work areas, any broken-down plant will be removed from proposed development to be fixed;

Activity	Mitigation Measures
Maintenance and wash down of vehicles and machinery	Ensure all equipment is well maintained and in good working order. A collection system shall be provided (i.e. trays or impervious linings) under machinery or equipment that may leak hydrocarbons/hazardous substances (e.g. generator and pumps). All routine truck and plant maintenance to be carried out off site at contractor depot. Vehicle/machinery repair whether minor or major on open ground or at the side of roads is forbidden. Emergency repairs, mechanical servicing and maintenance of Vehicles / equipment / site plant to be undertaken at designated workshop area designed to contain any spillage. Oil or lubricants only to be changed at designated workshops. The ground under the servicing areas shall be constructed of an impervious material and bunded as necessary. It is prohibited to allow wash water to cause pollution of the ground, surface water or ground water. Vehicle and equipment wash down shall only be undertaken at designated areas. The ground under the wash down area shall be impervious and designed to collect wash water. Install oil interceptors and silt traps where wastewater may be contaminated. Wash water will be re-used where possible (such as vehicle washing, dust suppression) and excess water collected and disposed of by an approved contractor to an approved site.
Sanitary facilities	Holding tanks will be fitted with overflow alarms and will be emptied on a regular basis at a frequency which ensures no overflow of sewage effluent by an approved waste disposal company to an approved site. It is prohibited to discharge sewage onto the open ground. It is prohibited to use open ground for sanitary purposes including bathing, defecating, urination, cooking, washing (dishes or clothing). Disposal of settled solids in accordance with permit conditions. Sludge will also be disposed of on a regular basis in accordance with regulations. Confirmation of underground infrastructure such as sewage lines prior to excavation.
Dewatering discharges	Dewatering of the excavation may be required. In the event that this is required, it will form part of the temporary works design to be undertaken by the Contractor during the construction phase.
Cementitious materials	The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out within works areas. Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed. Any spillages will be cleaned up and disposed of immediately. Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening. Concrete skips, pumps and machine buckets will be prevented from slewing when placing concrete. Mixer washings and excess concrete will not be discharged directly into any drainage ditches, surface water bodies or exposed groundwater. Surplus concrete will be returned to batch plant after completion of a pour.

7.5 Water Resources and Energy Use

Construction activities have the potential to use significant volumes of water and energy. This section identifies the potential impacts associated with water and energy use which may arise from construction and provides guidance on the management and control of water and energy on site.

7.5.1 Risk Identification

Contractors shall undertake a qualitative water resources and energy use assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.9.

Table 7.9 – Example of Water Resources and Energy Use Risk Assessment

	Risk Assessment	Example Procedure
01	Identify all items and activities on the construction site with high water and/or energy demands.	Mark up on a site plan with the location of all items and activities with high water and/or energy demands. This will help the planning of the overall layout of the construction site and enable the identification of efficiency opportunities.
02	Implement mitigation to eliminate or reduce water and/or energy demand.	Use the following hierarchy promote water and energy efficiency: Remove the requirement (different construction methods, substitution of materials for that require less water and/or energy). Control the use (modify construction methods, monitoring, target setting, procedures, switch off, training).

7.5.2 Water Resources and Energy Use Management Plan

Contractors should develop, implement and maintain a Water Resources and Energy Use Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.10).

Table 7.10 –Water Resources and Energy Use Mitigation Measures

Activity	Mitigation Measures
General	Reduce water consumption through recovery strategies. Conserve water by maximising opportunities for infiltration runoff. Conserve water by matching water quality with its intended use and using water saving devices. Contractors will carry out regular inspections/audits of water resource and energy use. In the event of excessive water use/leaking pipes etc, immediate action will be taken to repair equipment or reassess water needs. Use an irrigation system which utilises cooling water, condensate, TSE or another wastewater. Water arising from vehicle and equipment wash-down will be treated to remove silt and reused where possible. For example, wetting down roads and stockpiles.

Activity	Mitigation Measures
	Turn out the lights at night and only light areas as required for safety and comfort (employment of lighting sensors).
	Ensure that the light source is the minimum intensity for the required purpose.
	Ensure that fittings are chosen that direct light accurately to where it is needed.
	Vehicles will not be allowed to idle for long periods.
	Machinery and generators shall be regularly maintained and operated in an efficient manner.
	The use of solar powered instruments/machines should be considered.
	Temporary site offices should be well insulated to retain heat or cool, utilise energy efficient bulbs and energy efficient cooling systems.
	Choose locally sourced building materials and products thereby reducing the environmental impacts from transportation.
	Choose rapidly renewable materials over finite raw and long cycle renewable materials.
	Use timber and wood, including that used in construction, from a certified sustainable source, or be postconsumer re-used timber, or similar.

7.6 Ecology – Natural Habitats, Flora and Fauna

Construction activities can have adverse impacts on natural habitats, flora and fauna. This section identifies potential adverse impacts which may arise from construction and provides guidance on management and control.

7.6.1 Risk Identification

Contractors shall undertake a qualitative ecology risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.11.

Table 7.11 – Example of Ecology Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive ecological receptors within or adjacent to the construction site.	Mark on the site plan the location of all water courses, surface water features, ecologically sensitive areas and habitats. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as chemical/fuel storage areas, refuelling points, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example, water courses, ecologically sensitive areas and habitats.	Undertake baseline assessment of water quality prior to construction. Establish monitoring regime during and post construction.
03	Identify the construction activities and sources of pollution that may	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff, fuel storage and concrete use.

	Risk Assessment	Example Procedure
	affect the water/ecological receptors identified.	
04	Evaluate the risk of the construction activities polluting the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
05	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, provide adequate bunding for fuel and other storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.6.2 Ecology Management Plan

Contractors should develop, implement and maintain an Ecology Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.12).

Table 7.12 – Ecology Mitigation Measures

Activity	Mitigation Measures
General	Construction of the proposed development is to be programmed so that all critical works (excavations, coring, pouring of concrete etc) shall be carried out between 1st April and 30th of September. Detailed trigger levels for rainfall have been set out in the specific mitigation measures section below. Both NPWS and IFI will be informed in advance of works commencing. All operations will be in accordance with, but not limited to, the following guidelines: - ▪ Guidance on Assessment and Construction Management in *Margaritifera* Catchments in Irelands (Atkinson et al, 2023). ▪ The construction management of the Site will take account of the recommendations of the Construction Industry Research and Information Association (CIRIA) guidelines 'Control of Water Pollution from Construction Sites' and 'Groundwater control - design and practice' and CIRIA 2010 'Environmental Good Practice on Site' to minimise as far as possible the risk of pollution. ▪ Guidance on Protection of Fisheries during Construction Works In and Adjacent to Waters (IFI, 2016). ▪ The existing drainage network, specifically along the existing road, and as required elsewhere across the site, will be suitably protected (via. the use of physical barriers and / or the implementation a Site-specific water run-off management plan as required). Any chemical, fuel and oil stores will be located on an impervious base within a secured bund with a storage capacity 110% of the stored volume. Biodegradable oils and fuels will only be used.

Drip trays will be placed underneath any standing machinery to prevent pollution by oil/fuel leaks. Where practicable, refuelling of vehicles and machinery will be carried out on an impermeable surface in within the proposed site compound on station road.

Emergency spill kits will be available on site and staff will be trained in their use.

Operators will check all equipment, machinery and vehicles on a daily basis before starting work to confirm the absence of leakages. Any leakages should be reported immediately and addressed.

Daily checks will be carried out 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 be defective will be removed from site immediately or positioned in a place of safety until such time that it can be removed. All items of plant will be checked prior to use before each shift for signs of wear/damage.

Installation of Continuous Turbidity Meters upstream and downstream of the proposed works. A trigger level will be agreed with Galway County Council and NPWS in advance of the works commencing.

An Ecological Clerk of Works will be appointed by the Contractor to supervise proposed works and will be present on site at all times. All site staff will be informed of work methods to be employed on site, as well as the sensitivity of Lough Corrib SAC via the dissemination of a tool-box talk. This shall include the requirement for protection of aquatic and riverside habitats. A tool-box talk will be required at the start of each week or in advance of significant stages of the project (e.g. start of excavations, craning in of bridge). Additionally any staff new to the site will be required to attend the tool-box talk in advance of carrying out any works.

In order to prevent any potential surface water impacts via release of cementitious materials the following measures will be implemented where poured concrete is being used on Site;

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on Site and therefore these aspects will not pose a risk to the waterbodies present, namely the Owenriff River;
- The use of wet concrete on the project is restricted to the blinding layer for the north abutment, associated ramp and the camping for the south abutment and temporary crane pad mini bore piles. The concrete for north abutment and ramp will be self-contained within the base of the 1.4m deep foundation. The capping for the south abutment and temporary crane pad is located 14m and 23m back from the river. The quantity of concrete required for the capping is small and there is not considered to be a risk to the Owenriff River from this aspect of the project;
- Any spillages will be cleaned up and disposed of correctly;
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening;
- Concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete;
- There will be no mixing of concrete on site and all required concrete must be delivered to the site by ready-mix lorry;
- Washing out of the ready-mix lorry will not be allowed anywhere on the site and must take place back at the concrete supplier plant; and,
- Surplus concrete will also be returned to suppliers plant after completion of a pour.

At no point will any equipment be washed out within the work area or adjacent to a watercourse.

	All materials used on site, will be removed from site and disposed of at a licensed waste facility.
Tree felling	The required tree felling should take place outside of the breeding bird season (The season ahead of summer works). Sectional tree felling is to be used to allow a more controlled felling and prevent any impacts to the riverbank. Tree stumps on the riverbank will not be dug or ground out and will be left in place to decay naturally.
Water Quality – Silt Control Measures	▪ A combination of Silt mats, fences and wattles will be implemented to prevent any silt from entering the watercourse. The exact arrangement of these silt defences will vary depending on location but multiple layers will be installed at all locations to act as back up in the event of a failure. The first line of silt defences at all locations will be a silt fence before the riverbank crest with a line of straw wattles on both sides of the fence. The silt fence will be wrapped under the wattle on the works side of the fence. All wattles will be securely staked in place so that there are no gaps between them and the ground. Additional rows of silt matts or straw wattles will be arranged behind these. The ECoW will inspect all silt defences regularly and instruct repairs where necessary. Spare silt control materials will be kept at works areas on both banks so that they are available to repair existing defences or installing additional. ▪ Once works are completed any build-up of silt behind the silt defences will be removed by hand prior to removal of the defences. Given the small scale of the excavation, it is not anticipated that any measurable quantity of sediment will make sit's way to the silt defences. ▪ Dewatering of trenches. ▫ All excavation works will be planned for dry weather period leading up to the works and during them, will rainfall limits set for works below. ▫ It Is not expected that ground water will be encountered during excavation of the foundation, however, should water be encountered it will be pumped to a mobile water tank. The water tank will then be removed from the site and disposed of at a suitable waste facility. ▪ A section of concrete footpath on the western side of the north abutment approximately 18m long will need to be removed to allow for stone paving of the landing area for the ramp. The concrete will be cut into smaller section with a circular saw. The circular saw will be fitted with a vacuum system to collect dust produced during cutting. The sections will then be broken out using a mini digger.
Turbidity	Continuous turbidity meters will be installed and trigger levels set. This will allow for real time monitoring during construction and also evidence post construction that the project did not impact on the water quality of the river. The continuous Turbidity meters are to be installed and start recorded two weeks before the start of any works. In the event that trigger levels are reached downstream works will stop as quickly as safely possible. The ECoW will investigate the source of elevated levels.
Disturbance of Fauna	In order to mitigate potential impacts to otter, working hours shall be restricted to daylight hours. The river channel and riverbanks will not be artificially lit during hours of dusk and darkness.

Aquatic Habitat Condition	In advance of the start of construction (within 6 months, but no earlier than 12 months prior) the habitats will be resurveyed to set a baseline prior to construction. Following completion, the substrate will be resurveys to show the project has not impacted on the habitat available to QI species.

7.7 Light Pollution

Obtrusive light from a construction site is a form of pollution. Construction lights can cause glare and light trespass. These are forms of obtrusive light which may cause nuisance to others.

7.7.1 Risk Identification

Contractors shall undertake a qualitative light pollution risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.13.

Table 7.13 – Example of Light Pollution Risk Assessment

	Risk Assessment	Example procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all potential receptors including housing, schools, hospitals, roads and key wildlife populations. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for lighting.
02	Identify the construction activities and sources of light pollution that may affect the receptors identified.	These could include depots, storage areas, night working activities etc.
03	Evaluate the risk of the construction activities creating light pollution for the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods; provide adequate screening, directional light). 3. Protect the receptor (screens). 4. Put emergency procedures in place.

7.7.2 Light Pollution Control Plan

Contractors should develop, implement and maintain a Light Pollution Control Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.14).

Table 7.14 –Light Pollution Mitigation Measures

Activity	Mitigation Measures
General	Maintain levels of lighting acceptable for health and safety and avoid over lighting areas. Dim or switch off lights when task is finished. Minimise the spread/glare of light by assessing/managing direction. Lower the height of lights to minimise glare. Use screens, shields, baffles and louvers to help reduce light spill. Use specifically designed lighting equipment to minimise the upward spread of light near to and above the horizontal.

7.8 Archaeology and Cultural Heritage

Heritage is an irreplaceable resource, so it is recognised that cultural resources must be safeguarded for future generations. Construction activities have the potential to impact on archaeology and heritage through the destruction or disturbance of sites or artefacts.

7.8.1 Risk Identification

Contractors shall undertake a qualitative archaeological and heritage risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.15.

Table 7.15 – Example of Archaeology and Cultural Heritage Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all potential receptors including villages, forts, palaces, houses, and towers. The site plan must be updated and approved by the appointed project archaeologist. This will help the planning of the overall layout of the construction site.
02	Identify the construction activities that may affect the receptors identified.	These could include depots, storage areas, excavation, waste storage, haul roads etc.
03	Evaluate the risk of the construction activities damaging the identified receptors.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: Remove the risk (different construction methods/activities). Control the source (modify construction methods or operations - alternative haul roads). Protect the receptor (screens). Put emergency procedures in place.

7.8.2 Archaeology and Cultural Heritage Management Plan

Contractors should develop, implement and maintain an Archaeology and Heritage Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.16).

Table 7.16 – Example of Archaeology and Cultural Heritage Mitigation Measures

Activity	Mitigation Measures
Archaeological management Solutions (2024)	The Cultural Heritage Impact Assessment Report (AMS, 2024) recommends '*that a programme of advance archaeological testing is carried out post-consent and in advance of construction works, as follows:* ▪ *The licensed test excavation should be carried out in advance of construction with provision for full excavation and reporting (preservation by record) of whatever might be discovered on the site.* ▪ *The archaeological test excavations should be carried out under a Section 26 excavation licence issued by the Licensing Section of the National Monuments Service and in accordance with the guidance outlined in Framework and Principles for the Protection of the Archaeological Heritage (DAHGI 1999).* ▪ *The licence application for the archaeological testing should be accompanied by a detailed Method Statement that should be agreed in advance with the TII-assigned Project Archaeologist and the National Monuments Service.* ▪ *Following the completion of archaeological testing, reports detailing the findings should be submitted to the National Monuments Service and other statutory authorities, as per the conditions of the archaeological licences. Any significant results should be published in a suitable periodical such as the Journal of the Galway Archaeological and Historical Society.* ▪ *In advance of testing, consultation should be undertaken with the TII-assigned Project Archaeologist, Galway Heritage Officer and Architectural Conservation Officer regarding any additional mitigation measures that may be necessitated onsite during works.* ***Recommendations are subject to the agreement of the National Monuments Service of the Department of Housing, Local Government and Heritage, the National Museum of Ireland and the relevant planning authority and should only be carried out in accordance with the necessary approvals. Please note that the statutory and local authorities may issue alternative and / or additional recommendations / conditions'***

7.9 Traffic Management

Accidents involving construction vehicles and/or mobile equipment have the potential to cause serious injury or death and damage to the environment. Work zones on construction sites are used to move traffic in an approved direction and are typically identified by signs, cones, barrels, and barriers.

7.9.1 Risk identification

Contractors shall undertake a traffic management risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.17.

Table 7.17 – Example of Traffic Management Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all traffic sensitive areas within or adjacent to the construction site.	Mark a site plan with the location of all potential traffic sensitive areas including villages, forts, palaces, houses, schools, shopping districts, commercial/leisure areas roads and other rights of way. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for vehicle/pedestrian entrances, storage areas etc.
02	Identify the construction activities may affect the traffic sensitive areas identified.	These could include depots, storage areas, excavation, waste storage, haul roads etc.
03	Evaluate the risk of the construction activities impacting on traffic sensitive areas.	Assess the likelihood of an activity causing harm or obstruction.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: Remove the risk (different construction methods/activities). Control the source (modify construction methods or operations - alternative haul roads). Protect the receptor (screens, signs, barriers). Put emergency procedures in place.

7.9.2 Traffic Management Control Plan

Contractors should develop, implement and maintain a Traffic Management Control Plan.

7.10 Contaminated Land

The term ‘land contamination’ covers a wide range of situations where land is contaminated in some way by previous use. This is often associated with industrial processes or activities that have now ceased, but where waste products or remaining residues present a hazard to the general environment.

7.10.1 Risk Identification

Contractors shall undertake a contaminated land risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.18.

Table 7.18 – Example of Contaminated Land Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of contamination risks by undertaking site visits and	Mark a site plan with the location of all potential contamination risks including waste deposits, petrol stations, oil stores etc.

	Risk Assessment	Example Procedure
	desk-based studies of relevant documents - EIA etc.	
02	Identify the construction activities may create ground contamination.	These could include depots, storage areas, waste storage, etc.
03	Evaluate the risk of the construction activities leading to ground contamination.	Assess the likelihood of an activity causing pollution, damage or harm.
04	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods or operations) 3. Protect the ground (screens). 4. Put emergency procedures in place.

7.10.2 Contaminated Land Control Plan

Contractors should develop, implement and maintain a Contaminated Land Control Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.19).

Table 7.19 – Example of Contaminated Land Mitigation Measures

Activity	Mitigation Measures
General	The contractor will manage and control the potential contamination of land from construction activities through the implementation of the CEMP and method statements as appropriate. The contractor will notify Atkins immediately if contaminated land is discovered or suspected. The contractor will work with AtkinsRéalis to: ▪ Undertake a risk assessment of the potential contamination. ▪ Evaluate options for remediation including: ▫ Containment ▫ Monitoring ▫ Treatment ▫ Removal/Disposal The contractor will implement remediation strategy and monitor as appropriate.

7.11 Soil Erosion and Sedimentation

Soil eroded during land disturbance can wash away and contaminate storm water drains and nearby water bodies. The plan establishes a series of mitigation and management measures to control and minimise these issues if required. Water erosion potential depends on the intensity of the rainfall and/or construction discharges, the soil type and topography. This section identifies the potential causes of erosion and sedimentation which may arise from construction and provides guidance on the management, control and disposal of waste.

7.11.1 Risk Identification

Contractors shall undertake a qualitative soil erosion and sedimentation risk assessment or appraisal prior to the commencement of construction activities. An example risk assessment is shown in Table 7.20.

Table 7.20 – Example of Soil Erosion and Sedimentation Risk Assessment

	Risk Assessment	Example Procedure
01	Identify the location of all activities that could result in erosion and sedimentation, for example dewatering, and sensitive receptors within or adjacent to the construction site.	Mark a site plan with the location of all water courses, surface water features, boreholes, field drains, ecologically sensitive areas including surface and foul drainage systems and other potential receptors. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as dewatering, haul routes and wash out areas.
02	Identify sensitive receptors off site or downstream of the construction project that could potentially be affected by the works. For example, water courses and ecologically sensitive areas/nature reserves.	Mark a site plan with sensitive receptors outside the site boundary. This will help the planning of the overall layout of the construction site and enable the identification of suitable sites for high-risk activities such as dewatering, haul routes and wash out areas.
03	Identify the construction activities and sources of sedimentation/erosion that may affect the water receptors identified.	These could include excavations, dewatering, water course crossings, as well as general sources of pollution such as surface water runoff and concrete use.
04	Evaluate the risk of the construction activities polluting the identified water receptors.	Assess the likelihood of an activity causing pollution. Assess the significance of the harm sedimentation/erosion would cause to a particular water receptor.
05	Evaluate the risk of the construction activities contributing to and/or being affected by the groundwater table.	Assess the likelihood of an activity contributing to raised groundwater levels or being affected by these. Assess the significance of the harm additional water would cause to groundwater or other projects/receptors and the significance of the high water table on construction.
06	Implement mitigation to eliminate or reduce risks.	Use the following hierarchy to manage the risk: 1. Remove the risk (different construction methods/activities). 2. Control the source (modify construction methods, provide adequate bunding for storage areas, install measures such as silt fences or ditches to control runoff). 3. Protect the receptor (provide hard standing for compounds/storage areas, filter, control, contain discharges, ensure appropriate environmental permits are in place). 4. Put emergency procedures in place.

7.11.2 Soil Erosion and Sedimentation Management Plan

Contractors should develop, implement and maintain an Erosion and Sedimentation Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 7.21).

Table 7.21 –Soil Erosion and Sedimentation Mitigation Measures

Activity	Mitigation Measures
Soil Erosion	Methods to control erosion need to take into account the factors causing erosion – rainfall discharge intensity, soil type and topography. Possible erosion control measures may include, but are not limited to the following: ▪ Avoid the creation of steep slopes. Consider implementing terraces instead of long steep slopes to avoid runoff from precipitation. ▪ Do not release heavy discharges of water onto the soil. ▪ Prevent over-watering of loose areas for dust suppression. ▪ Keep site traffic to designated routes. ▪ Consider covering temporary roads and routes within site with either asphalt or stone. Appropriate rehabilitation will need to be applied. ▪ Undertake regular leak monitoring and maintenance of dewatering pipes. ▪ Maintain recommended maximum vehicle weightings to avoid destabilization and subsequent erosion of soil surface. ▪ Progressive rehabilitation of disturbed land or stockpiles by establishing temporary or permanent vegetation supported by irrigation. ▪ Cover excess work areas with geotextile type liners. ▪ Provide collection systems under machinery or equipment during wash down to prevent erosion from runoff. Flow attenuation - Employ mechanisms to control run off of precipitation such as temporary structures to slow running water to facilitate pollutant removal and infiltration and reduce runoff.
Sediment Control	Possible sedimentation control measures may include but are not limited to the following: ▪ Place sediment traps on all drainage lines such as geotextile lining. ▪ Construct collection channels capable of collecting all runoff water during storms if it contains fine clay particles. ▪ Use contained concrete washout control facility. ▪ Treat and discharge runoff water from retention basin at controlled flow rate through storm water discharge network. ▪ Inspect and clean the collection channels and retention basin on regular basis to prevent sediment build up. Stabilise the site as soon as possible after construction

8. Emergency Response Plan

The contractor shall establish, implement and maintain procedures to identify and manage potential environmental emergency situations and potential accidents. The contractor shall respond to actual emergency situations and prevent and mitigate adverse environmental impacts.

The contractor should periodically test, review and update emergency preparedness and response procedures.

8.1 Key Requirements

During construction accidents, incidents and emergencies that have an environmental impact may occur. In the event of an emergency, the first response is to locate the source of that which is giving rise to the environmental impact where appropriate and stop continuation of the situation, followed by the containment, control and mitigation of the situation.

For the construction site The Emergency Response Procedure will be displayed within the Site Office / compound.

A copy of the Material Safety Data Sheets for all the chemicals used on the project site will also be kept at the site office.

The main objectives of the Emergency Response Plan are to:

- Ensure that all means are available to contain the consequences of an accidental spill, fire or release of oil/fuel;
- Ensure that employees are suitably trained to respond to fire and spill;
- Ensure that proper reporting takes place; and
- Ensure that proper investigation is undertaken.

All contractor personnel and sub-contractors will be instructed and rehearsed, as appropriate, in the requirements of the emergency response procedure. Following control of an incident or emergency, an investigation will be conducted, and corrective actions identified and addressed. The Contractor's Environmental Manager will verify the close out of environmental related actions and notify the Employer and/or the Employer's Representative of any emergency.

8.2 Emergency Incidents

Emergency incidents are those occurring that rise to significant negative environmental effects including but not limited to the following:

- Any malfunction of any mitigation measure and/or environmental protection system;
- Any emission that does not comply with requirements of the contract and relevant licenses/permits;
- Any circumstance with potential environmental pollution; or
- Any emergency that may give rise to environmental effects (e.g. significant spillages or fire outbreak).

8.3 Spill Contingency Plan

The main causes of contamination can occur through:

- Spillage of hazardous material including fuel oils, waste materials or chemicals;
- Spillage of wastewater sewage and other liquid effluents; and
- Spillage of contaminated wash down water with oils, chemicals etc from vehicles, equipment and machinery.

Prior to commencing activities on site, Contractors should develop, implement and maintain a Spill Contingency Management Plan. The Plan should include but not be restricted to the mitigation measures below (Table 8.1).

Table 8.1 –Spill Mitigation Measures

Activity	Mitigation Measures
Mitigation Actions /Emergency Response	Contractors will carry out regular inspections/ audits of hazardous materials usage, handling and storage areas and regular/thorough maintenance of vehicles and hydraulic systems and inspections of sanitary facilities and disposal. All contractors handling hazardous materials will keep appropriate spill clean-up material adjacent to storage and maintenance areas. Emergency spill kits will be available on site and staff will be trained in their use. These will be located both at the site compound on Station Road and within the works area at Oughterard. Minimise the amount of diesel, oil, paint, thinners and other chemicals stored on site that pose potential spillage environmental hazards and use materials that minimise environmental impact such as lead-free paints, asbestos free materials etc. Storage areas will be located away from drains/trenches/wastewater collection devices in an impervious bund area (volume of the storage bund >110% of the largest storage tank contained within the bund). Collection systems will be provided/bunded if necessary, under machinery or equipment that may leak hydrocarbons/hazardous substances. The contractor shall be responsible for training all staff in the procedures for handling spills and shall provide all staff with appropriate personal protective equipment. The contractor shall provide all staff with appropriate personal protective equipment. Avoid impacting adjacent sites by ensuring all contractors activities, equipment and waste storage is confined to the allocated site boundary. In the event of a spill: ▪ Identify and stop the source of the spill and alert people working in the vicinity; ▪ Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action; ▪ If applicable, eliminate any sources of ignition in the immediate vicinity of the incident; ▪ Contain the spill using spill control materials, track mats or other materials as required. Do not spread or flush away the spill; ▪ If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses and/or sensitive habitats;

Activity	Mitigation Measures
	▪ If possible, clean up as much as possible using the spill control materials; ▪ Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with appropriate permits so that further contamination is limited; ▪ The Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring; and The Environmental Manager will notify the appropriate stakeholders such as Galway City Council, National Parks and Wildlife Service and/or the EPA.

8.4 Emergency Incident Response Plan

The Contractor will be required to detail emergency incident procedures in the detailed CEMP and develop an Emergency Incident Response Plan. The Plan will contain emergency phone numbers and method of notifying local authorities, statutory authorities and stakeholder. The Plan will include contact numbers for key personnel. The Contractor will ensure that all staff and personnel on site are familiar with the emergency requirements.

In the case of work required in an emergency, or which if not completed would be harmful or unsafe to workers, the public to local environment, Galway County Council will be informed as soon as reasonably practicable of the reasons and likely duration. Examples may include where the ground needs stabilising if unexpected ground conditions are encountered or equipment failure.

In the event of an emergency incident occurring, the Contractor will be required to investigate and provide a report to include the following, as a minimum:

- A description of the incident, including location, type of incident and the likely receptor;
- Contributory causes;
- Negative effects;
- Measures implemented to mitigate adverse effects; and
- Any recommendations to reduce the risk of similar incidents occurring.

Further, if any sensitive receptor is impacted, the appropriate environmental specialists will be informed and consulted with accordingly.

Any response measures will be incorporated into an updated Emergency Incident Response Plan.

8.5 Emergency Access

The Contractor will be required to maintain emergency access routes throughout construction and identify site access points for the working area.

8.6 Extreme Weather Events

The Contractor will consider the impacts of extreme weather events and related conditions during construction. The detailed CEMP should consider all measures deemed necessary and appropriate to

manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements should also consider extreme weather events where risks have been identified.

9. References

Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987, as amended, 2011 (S.I. No. 180 of 2011)

Air Pollution Act, 1987 (Emission Limit Values for use of Asbestos) Regulations, 1990, S.I. No. 28 of 1990

AtkinsRéalis (2025*), EIA Screening Report*

AtkinsRéalis (2025), Invasive Alien Plant Species Report

AtkinsRéalis (2025), *Natura Impact Statement*

AtkinsRéalis (2025) *Appropriate Screening Report*

Archaeological Management Solutions (2024), *Cultural Heritage Impact Assessment*

SLR Environmental Consulting (Ireland) Ltd (2025) N59 Pedestrian Bridge: OPW Section 50 Report

BS 3998; 2010. Tree Work. Recommendations

BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1 Noise and Part 2 Vibration

BS 5837/2012. Trees in relation to design, demolition and construction.

Building Research Establishment (BRE) document entitled 'Control of Dust from Construction and Demolition Activities'

CIRIA (2001). C532. Control of water pollution from construction sites. Guidance for consultants and contractors

CIRIA (2006). C648. Control of water pollution from linear construction projects. Technical Guidance

CIRIA (2008). C679. Invasive species management for infrastructure managers and the construction industry

CIRIA (2015). C741. Environmental Good Practice on Site

CIRIA (2015). C753. SuDS Manual

Environmental Noise Regulations 2006, S.I. No. 140 of 2006

Environmental Protection Agency Act 1992 (Noise) Regulations, 1994 S.I. 174 of 1994

European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Amendment Regulations 1996, S.I No. 359 of 1996 and 2001, S.I No. 632 of 2001)

European Communities (Control of Emissions of Gaseous & Particulate Pollutants from Non-Road Mobile Machinery) Regulations 2007, S.I. No.147 of 2007, as amended, 2011 (S.I. No. 263 of 2011), 2012 (S.I. No. 407 of 2012), 2013 (S.I No. 417 of 2013)

European Communities (Drinking Water) Regulations 2014, S.I. No. 122 of 2014

European Communities (Environmental Liability) Regulations, 2008, S.I. No. 547 of 2008, as amended, 2011 (S.I. No. 307 of 2011), 2015 (S.I. No. 293 of 2015)

European Communities (Noise Emission by Equipment for use Outdoors) Regulations, 2001, S.I No. 632 of 2001, as amended, 2006 (S.I No. 241 of 2006)

European Communities (Shipments of Hazardous Waste Exclusively within Ireland) Regulations 2011, S.I. No 324 of 2011

European Communities (Waste Directive) Regulations 2011, S.I. No. 126 of 2011, as amended, 2016 (S.I. No. 315 of 2016)

European Communities (Waste Electrical and Electronic Equipment) Regulations 2011 (S.I. 355 of 2011), as amended 2011 (S.I. No. 397 of 2011), 2013, (S.I. No. 32 of 2013). 2014 (S.I. No. 149 of 2014)

European Communities Conservation of Wild Bird Regulations 1985, S.I. No. 291 of 1985, as amended, 1986 (S.I. No. 48 of 1986), 1995 (S.I. No. 31 of 1995), 1997, (S.I. No. 210 of 1997), 1998 (S.I. No. 154 of 1998), (S.I. No. 131 of 1999), 2005 (S.I. No. 716 of 2005), 2010 (S.I. No. 65 of 2010), 2011 (S.I. No. 626 of 2011), 2012 (S.I. No. 84 of 2012)

European Communities Environmental Objectives (Groundwater) Regulations 2010, S.I. No. 9 of 2010, as amended, 2016 (S.I. No. 366 of 2016)

European Communities Environmental Objectives (Surface Waters) Regulations, 2009, S.I. No. 272 of 2009, as amended, 2012 (S.I. No. 327 of 2012), 2015 (S.I. No. 386 of 2015)

European Union (Environmental Impact Assessment and Habitats) (Section 181 of the Planning and Development Act 2000) Regulations, 2013, S.I. No. 403 of 2013

European Union (Properties of Waste Which Render It Hazardous) Regulations 2015, S.I. No. 233 of 2015

European Union Batteries and Accumulators Regulations 2014, S.I. No. 383 of 2014, as amended, 2014 (S.I. No. 349 of 2014), 2015 (S.I. No. 347 of 2015)

European Union F Gas Regulations 2006, as amended, 2015, S.I. No. 517 of 2015

European Union Regulation 2037/2000 (CFC's, HCFC's, Halons) - Ozone Depleting Substances. Control of Substances that Deplete the Ozone Layer Regulations 2006, S.I. No 281 of 2006, as amended, 2011 (S.I. No. 465 of 2011)

European Waste Catalogue (EWC) and Hazardous Waste List 2002

Flora (Protection) Order, 2015, S.I. No 356 of 2015

GCC (2022) Galway County Development Plan 2022-2028

Invasive Species Ireland (2016). Best Practice Management Guidelines. Japanese Knotweed.

Litter Pollution Regulations 1999, S.I. No. 359 of 1999)

Local Government (Planning and Development) Act 1963, S.I. No. 28 of 1963

Noxious Weed Act, 1936, S.I. No. 38 of 1936

NRA (2005a). Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes

NRA (2005b). Guidelines for the Treatment of Badger Prior to the Construction of National Road Schemes

NRA (2006). Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes

NRA (2008). Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes

NRA (2010). Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species on National Roads (Revision 1)

Planning and Development Act, 2000, as amended 2017 (S.I. No. 20 of 2017)

Planning and Development Regulations 2001, S.I. No. 600 of 2001

Protection of the Environment Act 2003

The Birds Directive: Council Directive 2009/147/EC on the conservation of wild birds

The Birds Directive: Council Directive of 2 April 1979 on the conservation of wild birds (79/409/EEC)

The European Communities (Birds and Natural Habitats) Regulations, 2011 (S.I. 477 of 2011), as amended, 2015 (S.I. No. 355 of 2015)

The Fisheries (Consolidation) Acts 1959 & 2001

The Forestry Act, 1946, S.I. No. 13 of 1946, as amended, 2009 (S.I. No. 40 of 2009) & Forestry Act, 2014, S.I. No. 31 of 2014

The Habitats Directive: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora

The National Monuments Act 1930, S.I. No. 2 of 1930, as amended, 2004 (S.I. No. 22 of 2004)

The Salmonid Regulations 1988, S.I. No. 293 of 1988

The Water Pollution Acts of 1977 & 1990

The Wildlife Act 1976 & Wildlife (Amendment) Act, 2000

Waste Framework Directive 2008/98/EC of the European Parliament and Council on waste

Waste Management (Collection Permit) Regulations 2007, S.I. No. 821 of 2007), as amended, 2015 (S.I. No. 197 of 2015), 2016 (S.I. No. 24 of 2016)

Waste Management (Facility Permit and Registration) Regulations 2007, S.I. No. 821 of 2007, as amended, 2008 (S.I. No. 86 of 2008), 2015 (S.I. No. 198 of 2015)

Waste Management (Food Waste) Regulations 2009, S.I. No 508 of 2009, as amended, 2015 (S.I. No. 430 of 2015)

Waste Management (Hazardous Waste) Regulations, 1998, as amended, 2000 (S.I. No. 73 of 2000)

Waste Management (Landfill Levy) Regulations 2008, S.I. No. 199 of 2008, as amended 2009, (S.I. No. 550 of 2009), 2010 (S.I. No. 31 of 2010), 2012 (S.I. No. 221 of 2012), 2013 (S.I. No. 194 of 2013), 2015 (S.I. No. 189 of 2015)

Waste Management (Miscellaneous Provisions) Regulations, 1998, S.I. No. 164 of 1998

Waste Management (Prohibition of Material Disposal by burning) Regulations 2009, S.I No. 286 of 2009, as amended, 2015 (S.I. No. 538 of 2015)

Waste Management (Registration of Brokers and Dealers) Regulations 2008, SI No. 113 of 2008

Waste Management (Tyres and Waste Tyres) Regulations 2007, as amended, 2017 (S.I. No. 400 of 2017)

Waste Management Act of 1996, 2001 and 2003

Waste Management Shipment of Waste Regulations 2007, S.I. No. 419 of 2007

Water Conservation Regulations 2008, S.I. No. 527 of 2008

Water Framework Directive (WFD): Directive 2000/60/EC of the European Parliament and Council establishing a framework for Community Action in the field of water policy, as amended

Water Policy Regulations 2003, S.I. No. 722 of 2003, as amended, 2005 (S.I No. 413 of 2005), 2008 (S.I No. 219 of 2008), 2010 (S.I. No. 93 of 2010) and Amendment (No. 2) Regulations, (S.I. 326 of 2010) & EU Water Policy Regulations 2014 (S.I 350 of 2014)

Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, S.I. No. 112 of 1990 and Wildlife Amendment Act, 2000 (S.I. No. 38 of 2000)

AtkinsRéalis

AtkinsRéalis Ireland Limited
150-155 Airside Business Park
Swords
Co. Dublin
K67 K5W4

Tel: +353 1 810 8000