Appendix 5

Appendix 5.1

Draft Construction and Environmental Management Plan

COUNTY DONEGAL
FLOOD RELIEF SCHEMES

Comhairle Contae Dhún na nGall
Donegal County Council

Tionscadal Éireann
Project Ireland
2040

OPW Oifig na nOibreacha Poiblí
Office of Public Works

rps MAKING COMPLEX EASY

BURNFOOT FLOOD RELIEF SCHEME

Draft Construction Environmental Management Plan

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1 INTRODUCTION

1.1 Objectives of the Construction and Environmental Management Plan (CEMP)

This document comprises a draft Construction Environmental Management Plan (CEMP) for the Burnfoot Flood Relief Scheme (FRS). It is a 'live' document and will be updated as the project progresses, including incorporating the requirements of conditions attached to statutory consents granted in respect of the Burnfoot FRS. This draft CEMP sets out the minimum requirements which will be adhered to during the construction phase of the Burnfoot FRS.

The purpose of the CEMP is to:

- Record environmental risks and identify how they shall be managed during the construction period;
- Provide a means of implementing environmental commitments, objectives and targets;
- Provide a means of monitoring and reporting performance against the environmental commitments objectives and targets;
- Provide a framework to ensure that all parties are aware of their responsibilities;
- Establish a checklist of control procedures which can then be integrated into an overall environmental management and implementation protocols;
- Describe how construction activities would be undertaken and managed in accordance with the obligations of environmental legislation and policy, and the requirements of environmental regulatory authorities and any conditions attached to statutory approval;
- Provide detailed environmental mitigation implementation measures for reducing the potential for environmental impacts during pre-construction and construction;
- Identify where activities require additional consents or licences;
- Act as an implementation tool for environmental issues between the design, and construction stages; and,
- Ensure the mitigation requirements of the associated environmental assessments (contained in supporting environmental documents for the planning application) are implemented.

The CEMP comprises two main parts;

Summary of Mitigation Measures (Chapter 3)

All mitigation measures and monitoring requirements proposed within the Environmental Impact Assessment Report (EIAR) and the Natura Impact Statement (NIS) are contained in this Section. In addition, the requirements of conditions attached to statutory consents granted in respect of the Burnfoot FRS, will also be inserted post consent.

This part of the CEMP will form part of the Contract Documents for the construction stage to ensure that the Contractor undertakes the works required to implement the mitigation and standard construction measures.

Management of Environmental Impacts (Chapter 4)

The objective of this part of the CEMP is to prepare a suite of Construction Phase Management Plans which will be finalised upon the grant of development consents. The content of these Management Plans is presented in draft form in the application documentation and will be finalised through discussion and agreement of Donegal County Council following such Approval as may be granted.

This CEMP has been prepared by RPS on behalf of Donegal County Council for the Flood Relief Scheme in Burnfoot, Co Donegal. The CEMP has been prepared in parallel with the Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) for the project and takes cognisance of the specific mitigation measures outlined in the EIAR and NIS.

The planning stage CEMP provides a framework from which a construction stage CEMP will be developed to implement the mitigation measures described below which are designed to avoid, minimise, or mitigate adverse construction effects on the environment during construction of the development. The planning stage CEMP will be finalised following grant of planning permission and prior to construction to include all relevant conditions imposed by the competent authority. Additional mitigation measures may be added following consultation with relevant parties.

Should any ambiguity or contradiction arise in the preparation of the construction stage CEMP between the text of the CEMP, the mitigation measures and planning conditions, the following precedence shall apply:

1. Planning conditions;
2. Project specific Mitigation measures; and
3. CEMP text.

The Contractor shall comply with any conditions arising from the site constraints identified and specified, all Statutory Regulations governing the works, and any additional measures or modifications that may be imposed on the Proposed Scheme by the competent authority.

1.2 Scope of the CEMP

The scope of the CEMP covers all environmental effects related to the construction of the Proposed Scheme. The term ‘construction’ in the CEMP includes all site preparation, restoration techniques, waste removal and related engineering and construction activities as authorised by the competent authority and associated permissions.

The CEMP will be integrated into the Contractor’s plan to ensure compliance with their legal and contractual obligations as well as implementing best practice in construction environmental management. The CEMP will be applicable to those carried out by sub-contractors.

1.3 Status of the CEMP

The status of the CEMP is as follows:

- This document comprises the draft CEMP and has been prepared during the preliminary design and in parallel with submission of full planning application stage of the Proposed Scheme.
- The CEMP is a 'live' document that can be reviewed on a regular basis and updated where necessary to include any further requirements from the competent authority.
- The CEMP will identify any further mitigation methods and control measures to be agreed with key stakeholders and to be in place before construction begins.
- During construction, the CEMP may be revised to take into account any modifications to the design, changes in external factors (for example, regulations or standards), any unforeseen circumstances, and any improvements in environmental performance arising from routine inspections
- The provisions of the CEMP will be incorporated into the contracts for construction of the Proposed Scheme. It would be a mandatory requirement for both the Principal Contractor and all subcontractors to comply with the CEMP to ensure that best practice is implemented during construction and to safeguard the environment.
- The requirements of the CEMP do not remove or overwrite the legal duties, responsibilities or obligations of the Principal Contractor (and subcontractors) and other parties in accordance with the contract documents and legislation.
- The CEMP is the mechanism for ensuring that the Proposed Scheme adopts relevant best practice management techniques for implementation of mitigation and standard construction features and for sustainable construction.

Figure 1.1 and Figure 1.2 shows the location and layout of the Proposed Scheme in Burnfoot.

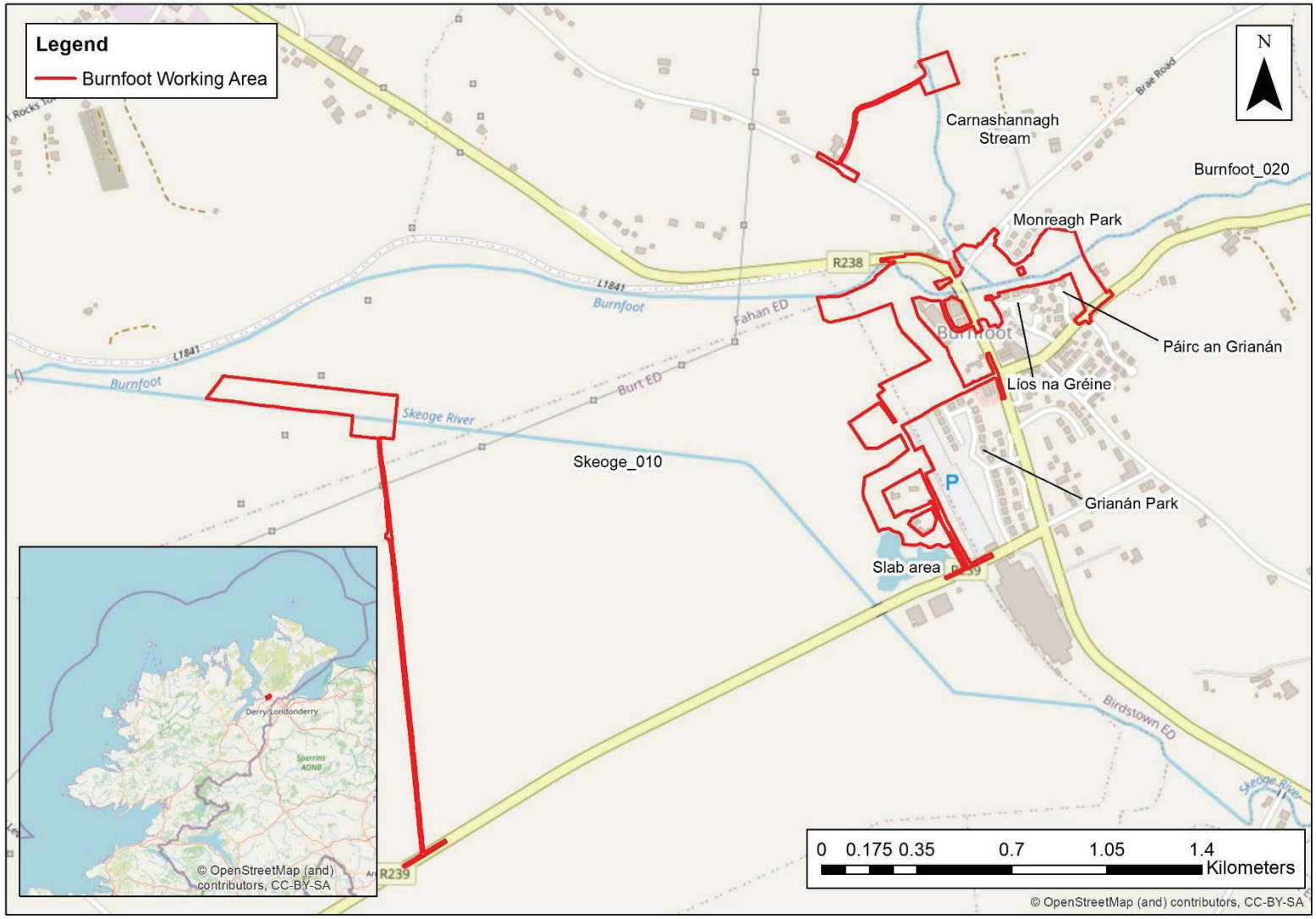

Figure 1.1: Burnfoot Location

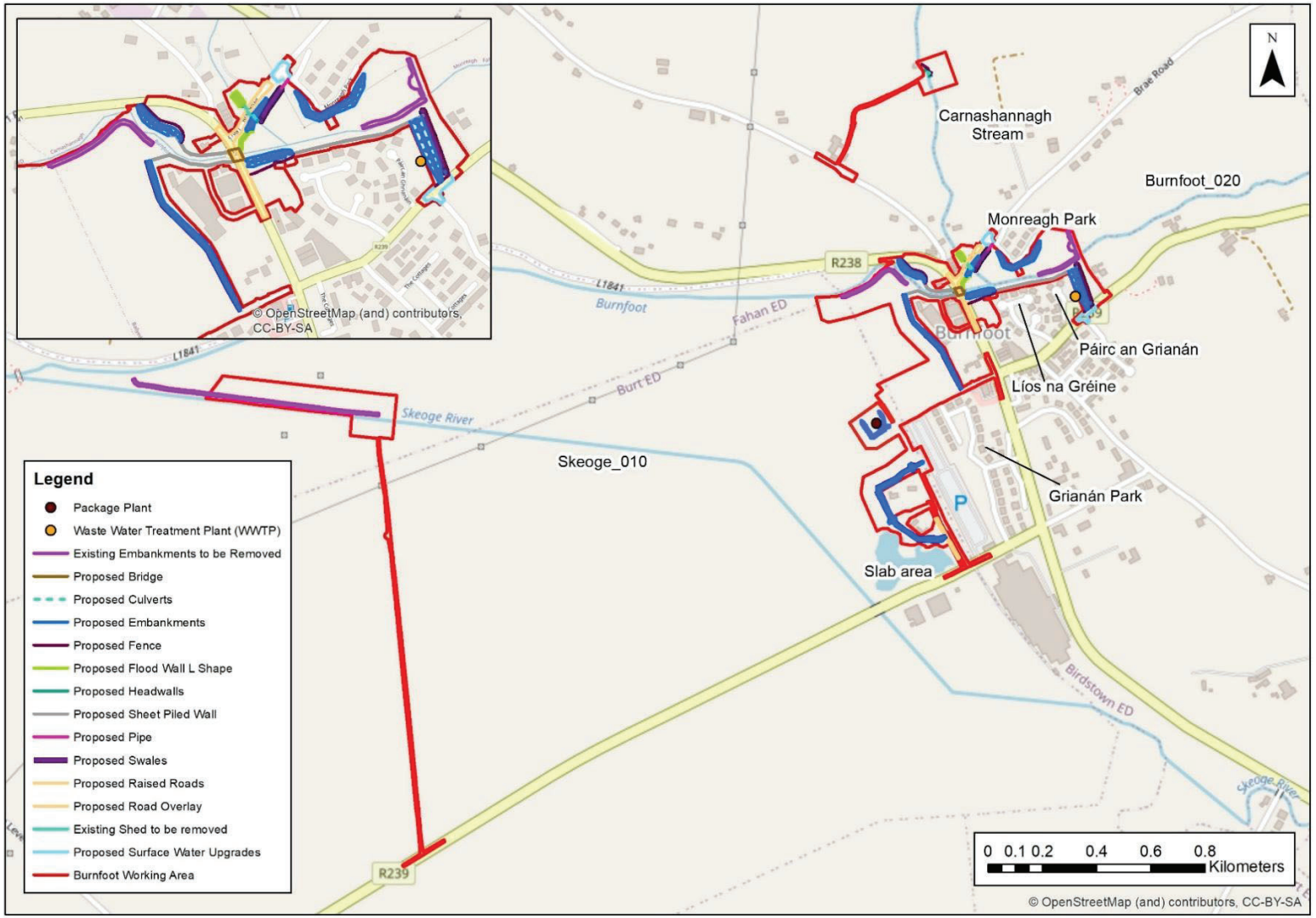

Figure 1.2: Outline of the Proposed Burnfoot Scheme

1.4 Description of the Construction Phase

An outline Construction Method Statement is included within the Preliminary Buildability and Operations & Maintenance Report with associated drawings and is included in this CEMP, an Appendix to the EIAR. The detail of this construction methodology and accompanying drawings provides the basis for the impact assessment of the Proposed Scheme. The Proposed Scheme can be considered in a number of distinct elements which are listed below:

1. Utility diversions;
2. Site establishment and clearance;
3. Flood Embankments – these are constructed where there is adequate space to enable their construction but also with consideration of maintenance requirements during the design life of the scheme;
4. Flood Walls – Proposed where there is insufficient space for embankments. These are located adjacent to Líos na Greíne and Páirc an Grianán residential developments and in the vicinity of the R238 bridge. Some walls have a steel sheet piled cut-off;
5. Demolition and replacement of the R238 bridge;
6. Culvert improvements on the Carnashannagh Stream;
7. Alterations to the existing Arterial Drainage Scheme Embankments;
8. Back Drainage; and
9. Reinstatement.

A summary of each of these elements is included below with more detail included in this CEMP.

1.4.1 Utility Diversions

All major utility diversions ideally shall be conducted in advance of the construction works where possible, especially the ESB electrical poles which will require permanent relocation to enable the construction of the proposed defences. Other works involving drainage infrastructure are relatively minor and can be accommodated during the construction of the defences by the main contractor. Based on the information collated to date, there are no obvious conflicts between existing utilities and the Proposed Scheme that would require significant enabling works.

There are a number of services and utilities currently crossing the bridge. These include a fibre-optic telecommunications cable and watermain. The latter of these is currently strapped to the upstream parapet of the bridge. Liaison and subsequent approvals with all utility providers will be required but the intention is to accommodate these within the proposed bridge deck.

1.4.2 Site Establishment and Clearance

The Proposed Scheme will require:

- Initial clearing of vegetation and trees within a working strip up to 20m in width.
- Treatment of invasive species will be required in advance to avoid any spreading as a result of the works.
- Temporary fencing of the working area will be required for the duration of the construction works for security and health and safety purposes.
- A stoned haul road will be needed to enable the transportation of embankment material into the site and along the length of the proposed embankments downstream of the Burnfoot bridge. This will need to remain as a permanent feature for means of access/egress for inspection, repair and maintenance.
- Temporary occupation of part of the rear gardens of properties in Líos Na Greíne and Páirc an Grianán.
- The proposed culvert upgrade on the Carnashannagh Stream will require the demolition of an existing stone outbuilding.

1.4.3 Flood Embankment Construction

The construction of the flood embankments will involve the following construction methodology:

- Stripping and storage of topsoil within the working area for reuse.
- Import and storage of suitable clay material to form the core of the embankment by lorry and road.
- Excavation of a trench will be undertaken by an excavator as a suitable cut-off, and clay placed and compacted in layers until the defences have reached the necessary height.
- Embankment front and back slopes will be profiled to meet the required gradient of 1 in 3. The embankment will then be topsoiled with a suitable, biodegradable geotextile and sown in grass.
- Stockproof fencing will be required where embankments are to be located in agricultural land where grazing is likely.
- For the low bund embankments around the properties on Slab Road there will be localised raising of the access road where the embankments tie into it up to a maximum of 300mm.

The exact locations of the proposed flood embankments can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_101 and IBE2204_Bt_102 with typical cross sections shown from Drawing IBE2204_Bt_105 to Drawing IBE2204_Bt_113 and Drawing IBE2204_Bt_117.

1.4.4 Flood wall Construction

1.4.4.1 Sheet Piled Wall

Based on geotechnical assessment it is considered necessary to have sheet pile walls positioned to the rear of Líos Na Greíne and Páirc an Grianán (Figure 1.3) and also on both banks downstream of the Burnfoot Bridge (Figure 1.4).

Sheet piles are not aesthetically attractive and require a capping beam which typically is 750-1000mm square formed along the top of the driven piles. For this reason, a design which terminates the piles and the subsequent capping beam at existing ground level with a cantilevered flood wall of width 250-300mm extending above ground to the required flood defence height is proposed.

The exact locations of the sheet piled wall can be seen in the submitted Planning Drawings, Drawing IBE2204_Bt_106 and Drawing IBE2204_Bt_110 along with typical cross sections.

Figure 1.3: Rear of Líos Na Greíne and Páirc an Grianán

Figure 1.4: R238 Burnfoot Bridge and downstream banks

1.4.4.2 Reinforced Concrete Wall

There are a number of short sections of reinforced concrete wall which are proposed where insufficient space exists for the construction of a flood embankment. These are immediately upstream of the bridge to connect the earth embankments and the bridge parapets. There is also another two short sections; one approximately 60m downstream of the Burnfoot bridge on the left-hand bank and one on the right-hand bank upstream of the Brae Road connecting into the proposed headwall at this location. These will be constructed from cast in-situ reinforced concrete.

The exact locations of the proposed reinforced concrete wall can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_107, to IBE2204_Bt_109 along with typical cross sections.

1.4.5 R238 Bridge Replacement

The R238 bridge needs to be replaced as part of the scheme but it has a considerable number of vehicle movements per day. The R238 Annual Average Daily Traffic (AADT) flow through Burnfoot is 12,380. This will therefore require a methodology to account for demolition of the existing structure and construction of the new bridge while facilitating the traffic movements during this process.

The only feasible option to facilitate demolition of the existing R238 bridge and construction of a new bridge is to create a temporary bridge, immediately upstream of the existing structure.

The existing bridge can be demolished offline, and a new bridge constructed before removing the temporary structure and opening the new bridge to traffic. The R238 will need to be realigned onto the new Bridge and the only location where the temporary bridge can be located is in the fields upstream of the existing bridge. These are lower than the existing road, so suitable stone will need to be imported to facilitate the construction of a temporary road extending from Monreagh Park (L-1881) to the north to a suitable point just south of the river.

The temporary bridge location and cross section is illustrated in Drawing IBE2204_Bt_201. The exact locations of the proposed permanent bridge can be seen the submitted Planning Drawings, Drawings IBE2204_ Bt_107 and IBE2204_Bt_110 with typical elevation and sections shown on Drawing IBE2204_Bt_202.

1.4.6 Culvert Improvements

On the Carnashannagh Stream, conveyance improvements are required in two locations. These works consist of the construction of a new culvert inlet where the watercourse passes beneath Brae Road/Monreagh Park and a new culvert approximately 400m upstream.

At the upstream location, the works will require the removal and disposal of the existing culvert using an excavator and the minor realignment of the stream on approach to the culvert headwall. Eighteen metres of a new, reinforced concrete box culvert of 1.2m high x 2.4m wide will be laid upon imported granular subbase and the works will be completed with a suitable head wall and trash screen and tail wall. These will be precast reinforced concrete structures that can be purchased as standard and set into place.

At the lower location, a box culvert of 1.2m high x 2.4m wide will be required to accommodate future climate change scenario river flows. This culvert will be extended downstream from the Brae Road until it passes beneath the proposed flood embankment from where it will continue in an open channel to the confluence with the Burnfoot river.

The works will be undertaken during a dry period to ensure low flows. This will facilitate the temporary damming of the river and diversion of the flow via temporary pipes over a short section where work is being undertaken. Consideration will be given to over-pumping to ensure the works remain dry for the placement of the concrete base for the structures.

The exact locations of the culvert improvements can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_108 and IBE2204_Bt_109 along with typical cross sections.

1.4.7 Alterations to the Arterial Drainage Scheme Embankments

The Proposed Scheme includes removal of two sections of embankment downstream of the town to allow floodplain reconnection. One of these, on the left bank of the Burnfoot River is part of an existing OPW maintained Arterial Drainage Scheme. The other, on the right bank of the Skeoge River, is a privately owned

embankment. This will involve simple removal of the embankments using an excavator and dumper/lorry to remove the material from the site.

The locations of the embankment removal downstream can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_111 and IBE2204_Bt_115 along with typical cross sections.

There are also two embankments upstream of Burnfoot Bridge at Monreagh Park that are proposed to be removed to allow reconnection of the flood plain along this reach of the Burnfoot River. The locations of the embankment removal at Monreagh Park can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_114 and IBE2204_Bt_106 along with typical cross sections.

1.4.8 Back Drainage

With the construction of the new flood defences, each will have some degree of cut-off to prevent excessive flow beneath the embankments. Along with the above-ground barrier, this restricts the ability of the land behind the defences to drain post scheme. To facilitate this drainage, and ensure the land behind the defences does not become waterlogged, the construction of a series of land drains behind the defences will be required. This will consist of a series of perforated pipes bedded in no fines granular material and laid parallel to the defence line at the rear toe. Precast concrete manholes will be provided at regular intervals to facilitate access for maintenance or changes in direction.

The outfalls of the backdrain will discharge to the river via precast concrete headwalls mounted with flap valves to prevent backflow. The outlet pipework will therefore have to pass either beneath embankments or through walls as applicable.

The exact locations of back drainage can be seen in the submitted Planning Drawings, Drawings IBE2204_Bt_107 and IBE2204_Bt_110 along with typical cross sections.

1.4.9 Reinstatement

Reinstatement will be undertaken to the entire working area on a like-for-like basis as far as is possible. Within areas of open space or agricultural fields, this will be limited to installing some localised lateral drainage to connect into the back drainage, re-grading of the ground, topsoiling and sowing in grass.

In residential properties, this will additionally involve the replacement of garden sheds, reinstatement of paving areas, replacement of property boundaries, fences, and planting.

1.4.10 Landscaping proposals

The landscaping proposals are included in the submitted Planning Drawings, Drawing IBE22024_Bt_204 and include:

- Retention of existing vegetated areas, which are to be retained and protected in accordance with BS 5837;
- Proposed specimen tree planting, comprised of Heavy Standard Trees of locally appropriate native species;
- Proposed woodland planting areas comprised of locally appropriate native tree and shrub species;

- Proposed areas of grass seeding to proposed swales;
- Proposed areas of low maintenance grass seeding to embankments;
- Proposed areas of low maintenance grass seeding to remaining areas;
- Pedestrian areas of low maintenance grass seeding to remaining areas;
- Pedestrian circulation route, surfaced in resin bound aggregate; and
- Street furniture elements comprised of bench seating and litter bins.

1.5 Description of Operational Phase

Given that the main elements of the Proposed Scheme are hard defences, culvert improvements and a bridge replacement there are no unusual or specialist maintenance or operational activities envisaged. A description of envisaged maintenance activities for each element of the Proposed Scheme is detailed below. Inspections, cleaning, and maintenance works including repairs, where necessary and in accordance with standard asset management procedures, will be the main operational activities.

- Defence walls (Piled and RC) – maintenance regarding these will be minimal. Inspections in accordance with standard asset management procedures are likely to be the main activities. Dealing with vandalism (graffiti or damage) to capping stones can be an issue. This will require access to private gardens and properties, especially at the rear of Líos Na Greíne and Páirc an Grianán.
- Flood Embankments – these will need regular inspection and should be mowed at least twice annually to prevent growth of significant vegetation. Inspection activities will need to look for presences of animal burrowing or damage from livestock. Fencing of the defences where they are located within agricultural fields should prevent the latter. Access to embankments is easily achieved for both inspection and maintenance purposes. It is envisaged that embankments adjacent to the R238 bridge will be maintained by a ride on or pushed mower whereas the agricultural embankments may be cut by tractor mounted flail.
- Culverts – Inlet structures and screens will need regular inspection and cleaning. This is particularly important prior to and post significant rainfall events. The inlet structures will be designed to facilitate ease of access for cleaning and removal of debris.
- Drainage elements – Flap valves will need to be checked regularly to ensure they are working as they form a key aspect of Scheme function. These will be designed in such a way to provide safe access. This can be within a manhole on the defended side of the defences rather than at the point of outfall to the river. Back drainage will need to be checked for blockage and rodded if necessary. Manholes will be provided to enable this to happen. In certain instances, these manholes may be located on private property including residential gardens and agricultural land. Although potential road drainage improvements will only be confirmed at the detailed design stage, and should they be deemed necessary, their maintenance will be required. Swales will require little maintenance; however, it is important to inspect for any obstructions in the channel which may hinder flows or that may be conveyed into the Carnashannagh Stream / Burnfoot River, as well as management of vegetation growth within the channel.

- Bridge – The bridge will be maintained by Donegal County Council in accordance with their inspection and asset management procedures.

1.6 Other related projects and potential for ex-situ effects

The proposed greenway is the only other known construction activity that may coincide with the construction of the FRS at this stage of the contract. This will not adversely affect the delivery of the Proposed Scheme and may compliment it by incorporating a walkway along the crest of the embankments. This will be reviewed as the development of the Proposed Scheme progresses.

Two such projects that have been completed or are ongoing are as follows:

- Burnfoot water mains upgrade
- Burnfoot Wastewater Treatment Plant (WWTP) upgrade

The upgrade to the old water mains along the L1861 and L1851 Inch Road in Burnfoot were completed in August 2022 to ensure a more reliable water supply, reducing leakages and improving water quality. Burnfoot Waste Water Treatment Plant (WWTP) is a critical facility for wastewater management in Donegal and is currently constrained by both hydraulic and organic loading. The WWTP upgrade is aimed at enhancing capacity, improving compliance with discharge licencing, and preventing exceedances that affect water quality. The timeline for completion of the Burnfoot WWTP upgrade is 2030.

2 CONSTRUCTION CHARACTERISTICS

2.1 Site Establishment

The site office and welfare facilities (site compound) will be confirmed in advance of the commencement of site works, but shall be located within the defined site boundary. All the sub-contractors as well as the main contractor and project manager will occupy offices within the construction compound. The site parking for all staff, contractors and visitors will also be located in this area.

The site perimeter will be marked by fencing which will be installed around all the site compound. Access roads will be constructed to carry out the works.

2.2 Site Clearance

To facilitate the construction of the Proposed Scheme, site clearance will have to be carried out to remove vegetation. No removal of habitats or movement of construction machinery will occur outside of the development works area/footprint during construction phase. Existing trees and hedgerows shall be retained where possible.

Temporary surface water management measures will be put in place prior to stripping of topsoil. Topsoil will be retained and used on site and reused if possible.

2.3 Demolition and Site Works

Two properties (domestic sheds) are to be demolished and relocated. Services will be disconnected from these properties as appropriate prior to demolition. In addition, asbestos surveys will be carried out on these properties. Should asbestos be found it should be removed before demolition and taken to an EPA-licensed hazardous waste transfer station. These facilities accept asbestos waste and then arrange to have it disposed of at an appropriate facility abroad as outlined in EPA's guidance on the Best practise guidance for handling asbestos. Remaining demolished materials will need to be taken away to a suitable landfill and the property site will be levelled off.

2.4 General Safety and Health Considerations

Health & Safety issues will be the primary concern for the appointed Contractors. This will apply in respect of persons working on the site and in respect of passing pedestrians, motorists, or other transport carriers. In this regard the highest possible care will be taken in providing a detailed Construction Stage Health and Safety Plan in advance of works commencing on site.

The works will be subject to the Safety, Health and Welfare at Work Act 2005 and the Safety, Health, and Welfare at Work (Construction) Regulations, 2013. All aspects of design construction will be reviewed with regard to health and safety and a risk assessment will be carried out.

Visitors will not be allowed onto the site unless in possession of a current Safe Pass (or equivalent) demonstrating they have undertaken appropriate construction site Health & Safety training. Visitors will also

be required to receive formal induction or be accompanied by an authorised person who has completed the induction. All visitors will be required to sign a visitor's book.

It is intended to operate a Health, Safety & Environmental Management System in line with ISO 18001 & ISO 14001. This Management System translates the company policy into processes to ensure safety, health and environmental responsibilities and performance can be monitored, reported, and improved.

A suitably qualified and competent Project Supervisor Design Process (PSDP) will be appointed and a suitably qualified and competent Project Supervisor Construction Stage (PSCS) will be appointed in line with those requirements laid down in the Safety, Health, and Welfare at Work Construction Regulations 2013.

All individuals working on the Project will be required to undertake induction procedures. Such will be designed to make individuals aware of all the issues associated with the Project and will include, but not be limited to;

- The terms of the CEMP;
- Working Hours;
- Access arrangements;
- Health, Safety and environmental policy and procedures;
- Code of Conduct within the site and surrounding environs;
- Statutory obligations of individuals on site;
- Traffic Management;
- Site parking;
- Public Access;
- Lighting requirements;
- Complaints and disciplinary procedures;
- Protection of the water environment;
- Protection of wildlife and habitats;
- Dust and air quality;
- Noise and vibration;
- Emergency procedures.

3 SUMMARY OF MITIGATION MEASURES

3.1 Mitigation measures arising from the EIAR and NIS

Table 3-1 summarises the potential impacts arising from the Proposed Scheme and the mitigation measures and monitoring recommended within the EIAR and NIS.

Table 3-1: Mitigation measures and monitoring

Potential Impact	Summary of Proposed Mitigation
Chapter 6 BIODIVERSITY – AQUATIC	
Fine sediment runoff/entrainment and the release of pollutants Temporary obstruction of fish passage Loss/crushing of sensitive species life cycles Noise and Vibration Habitat loss Permanent obstruction of fish passage	The IFI document "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters" (2016) shall be referenced for guidance on construction timing. In-stream works shall occur between July and September, with any early work requiring IFI approval. Outside this window, appropriate drainage management is necessary. The Carnashannagh Stream is less constrained by IFI guidelines as it does not support fish. Consideration must be given to protected species such as Atlantic salmon, lamprey species, European eel, and migratory sea trout during their migratory, spawning, and early life stages. A temporary drainage scheme based on Sustainable Drainage (SuDs) principles shall be developed by the contractor to manage surface water runoff. The contractor must also prepare an Emergency Response Plan (ERP) to address sediment and pollutant spills, which shall be included in the CEMP. Mitigation measures for managing hydrocarbons and concrete pollution include minimising on-site fuel storage, using mobile double-skinned fuel bowsers for refuelling, ensuring bunding capacity around fuel tanks is 110%, and conducting refuelling at least 50 meters from watercourses. Designated rinse-down areas for concrete-contaminated equipment shall be established, and personnel shall receive training on sensitive site receptors. Mitigation shall also include: • On-site refuelling of machinery using mobile double-skinned fuel bowser according to clearly defined refuelling protocol. • Provisions of Toolbox talks to plant personnel on sensitive receptors within the site, paying particular attention to water pollution and the presence of salmon, trout, lamprey, and eels. • Concrete pours to occur in contained areas and rinsing of plant at dedicated locations. • The proposed drainage system for the site shall facilitate the interception of diesel, oil, or other polluting

Potential Impact	Summary of Proposed Mitigation
	substances during the construction phase, and avoid pollutant release beyond working site boundaries. Site management must contain pollutants control during construction, with precautions to prevent spillages in line with EPA Integrated Pollution Prevention Control procedures. An Ecological Clerk of Works (ECoW) shall be employed to oversee environmental practices and monitor watercourses, including developing the ERP for serious pollution incidents. The CEMP shall outline environmental controls, including water quality monitoring by the ECoW, who will conduct weekly inspections and monitor various water chemistry parameters at predefined sites. Continuous turbidity monitoring will establish baseline values and trigger responses during construction. To mitigate potential fish loss near Burnfoot Bridge, capture and translocation of sensitive fish shall occur before in-channel works, requiring authorisation from IFI. Large-scale piling works near the Burnfoot River shall be avoided from October to May to protect salmonid spawning and migration. Vibrohammers are recommended for piling to minimize shock. ECoW to undertake weekly inspections at all outfalls. ECoW to monitor water chemistry (colour, suspended solids, nitrate, Dissolved Reactive Phosphates, Ammoniacal Nitrogen, Turbidity, BOD, Free Ammonia, Total Phosphorus and TPH) at a series of pre-defined monitoring sites in streams draining the Proposed Scheme. Frequency of monitoring will vary from continuous to monthly depending on location. Continuous monitoring of the turbidity baseline 1 month prior to works commencing will be used to establish a proxy measure for TSS and to inform a trigger threshold value for alarm sensing during the construction phase. When an alarm value is triggered, this will permit a reactive response (e.g., settlement pond outflow shut-off). Within 12 month of the completion of the Proposed Scheme, a qualified ecologist shall be appointed to undertake macroinvertebrate monitoring at key watercourse locations upstream and downstream of the Proposed Scheme in order to compare values with the pre- construction baseline (see current report).
Chapter 7 BIODIVERSITY – TERRESTRIAL AND BIRDS	
Water Quality and Habitat Deterioration Spread of Invasive Species Impact on Protected Species: Bats, Otter, and Birds	A range of mitigation measures is proposed to address potential effects on designated sites, adhering to best practices and relevant guidelines, including: • CIRIA Good Practice Guidelines on water pollution control from construction sites (2001).

Potential Impact	Summary of Proposed Mitigation
Aerial Noise and Disturbance Bird Monitoring Habitat Fragmentation	• NetRegs Guidance for Pollution Prevention (GPP) series, which covers various activities, including oil storage, oil separators, and pollution incident response. • Fisheries Guidelines for Local Authority Works** (Anonymous, 1998). • Guidelines on Protection of Fisheries During Construction Works (IFI, 2016). • Control of Substances Hazardous to Health (COSHH) for handling hazardous materials. • To minimize risks from oils and chemicals, the following procedures will be implemented: • Storage of fuels, oils, and chemicals will occur on an impervious base within a bund, ensuring the base and bund walls are impermeable and of adequate capacity, following GPP 2 and GPP 26 guidelines. With these measures implemented, potential effects on water quality from pollutants and sediments are expected to be fully mitigated. All works should ideally be conducted outside the wintering period (October to March), except for areas near Burnfoot Bridge, which are not significant for wintering birds. To mitigate aerial noise and visual disturbances to otters in the Lough Swilly SAC, works shall be conducted during daylight hours, with artificial lighting used only when necessary. Additionally, measures will be taken to provide safe dry passage for otters during floods, such as constructing ledges or dry culverts, which will enhance otter habitats. The Proposed Scheme may inadvertently spread invasive species into the Lough Swilly SAC and associated areas. An Outline Invasive Species Management Plan (oISMP - Appendix 7.2) will guide the control or eradication of Japanese knotweed and Salmonberry on-site, ensuring that potential effects from invasive species are mitigated. Vegetation clearance must occur between September 1st and February 28th to avoid the breeding bird season, thereby mitigating adverse effects on nesting birds. Construction activities affecting wintering bird populations near Burnfoot will also be timed to avoid the wintering period. The development is not expected to significantly impact bats, aside from potential disturbances from artificial lighting. To mitigate impacts on bats, construction shall occur during daylight, and artificial lighting shall be used sensitively. Incorporating bat boxes suitable for Daubenton's bats into the Burnfoot Bridge structure is recommended to enhance bat habitats. The demolition and reconstruction of Burnfoot Bridge present an opportunity to design features that facilitate safe otter passage during low flow and flood conditions. It is proposed that the bridge

Potential Impact	Summary of Proposed Mitigation
	design includes a full span with dry habitat areas and a suitable shelf or culvert for otter passage during high flows. While complete passage during all conditions may not be feasible due to flash flooding, accommodating otter passage in most conditions will significantly improve habitat connectivity. With these design features incorporated, predicted habitat fragmentation effects will be fully mitigated, providing significant enhancements for otters within the proposed project. No additional monitoring of bird activity on the site is planned following construction. However, it is anticipated that the operational phase of the proposed development will positively impact wintering bird populations in the Lough Swilly SPA due to the removal of flood embankments and the partial restoration of more natural processes downstream of Burnfoot. Regular monitoring of breeding tern colonies and wintering bird populations within the SPA is already in place as part of the NPWS monitoring programme. This ongoing monitoring is expected to capture any potential benefits from the alleviation of floodwaters during the operational phase, as well as any unforeseen negative effects on breeding waterfowl resulting from the development.
Chapter 8 POPULATION AND HUMAN HEALTH	
Air Quality Impacts Socio Economic Impacts Alterations to the water environment Increased Noise levels Traffic and Transport Increase Risk of Major Accidents and Disasters Risks to Water Quality and Flooding	Mitigation measures will be implemented during the operational phase of the Proposed Scheme to ensure effective flood risk management throughout its design life. As climate change pressures increase, mechanisms will be incorporated to allow the Proposed Scheme to adapt and maintain the required Standard of Protection for the local population. This adaptation aims to safeguard the community and human health from future flood risks. Additionally, monitoring will focus on environmental precursors to potential health impacts, enabling proactive interventions before any health issues arise, with the need for such monitoring determined by relevant technical disciplines. Monitoring efforts will focus on environmental indicators that could signal potential health impacts, allowing for proactive interventions before any health issues arise. The need for such monitoring will be determined by relevant technical disciplines.
Chapter 9 FLOOD RISK	
Weather warnings during construction works Flood Risk	Met Éireann provide a weather warnings alert service which is available on the Met Éireann app or through its website https://www.met.ie/. These warnings can be used during construction to manage the risk of flooding to the works from extreme events.

Potential Impact	Summary of Proposed Mitigation
	The Proposed Scheme will protect the area from fluvial flooding which is considered 'primary mitigation,' in which the scheme design evolves throughout the pre-application phase. Flood protection measures are integral to the project and do not require further action. It is essential to prevent any third-party interference with the structures of the Proposed Scheme and to ensure their maintenance to uphold the Standard of Protection (SoP) throughout the project's lifespan. After construction is completed, Donegal County Council will be responsible for monitoring and maintaining the Proposed Scheme.
Chapter 10 WATER QUALITY	
Suspended Sediment and Sedimentation Concrete and Cement Pollution General Construction Works Maintenance Hydromorphological Changes	Mitigation measures for the Proposed Scheme will be implemented by contractors in accordance with the CEMP. Upon appointment, contractors will provide a detailed Construction Management Plan for approval by the Planning Authority. These measures will adhere to recognized international and standard practise guidelines, including: • CIRIA Good Practice Guidelines on water pollution control from construction sites (2001). • Control of Water Pollution from Construction Sites (C532). • Environmental Good Practice on Site (3rd edition) (C692). • Guidelines on Protection of Fisheries During Construction Works (2016). To prevent sediment pollution, effective erosion and sediment controls will be implemented, including: • Establishing drainage and runoff management before construction, with arrangements for treating dirty groundwater from excavations. • Limiting earthworks to summer months when feasible. • Surveying the site to identify existing drainage features and water bodies. • Installing silt fencing around the site perimeter to prevent silt-laden water from leaving the site. • Cutting drainage ditches to intercept surface water and periodically pumping treated water from excavations through settlement ponds. • Displaying emergency contact numbers for relevant environmental agencies on-site and training personnel on pollution prevention.

Potential Impact	Summary of Proposed Mitigation
	• Daily inspections of implemented measures by the site manager, with records maintained. • Storing soil and materials away from surface water drains and ensuring no direct pumping of silty water into watercourses. • Implementing emergency measures for potential flooding, including placing silt fencing and settlement ponds above the 10-year flood level and keeping stockpiles of soil out of the floodplain. • Protecting exposed earthworks and conducting early landscaping and seeding of embankments. • Establishing a stable working platform for construction activities, potentially within the Burnfoot River, using clean stone to minimize sediment. To minimize spillage of debris and dust onto public roads, measures include covering vehicles transporting materials, sweeping hard surface roads, and providing washdown facilities for vehicles exiting the site. The use of concrete near water bodies will be carefully controlled to prevent pollution. Specific measures include: • Conducting excavation around sheet piles to facilitate the construction of capping beams, ensuring careful placement of concrete to contain it within formwork. • Constructing new inlet and outlet structures during dry periods to minimize water flow disruptions. • Providing a concrete washdown area on-site, designed to contain cement-laden water and ensuring no wash-out occurs near drainage features. • Implementing controls for on-site batching of concrete and ensuring emergency procedures are in place for accidental spillages. Good site management will control risks associated with machinery and operations, including: • Preparing a detailed CEMP to minimize impacts and maximize benefits. • Mapping existing drainage points and protecting them from sediment and pollutants. • Providing welfare facilities with proper waste collection.

Potential Impact	Summary of Proposed Mitigation
	Careful handling of oils and chemicals will involve using metal containers for fuel, employing drip trays, and securing gas bottles. Refuelling will occur off-site when possible, with spill protection equipment available. A Pollution Incident Response Plan will be developed to address any breaches in environmental management procedures. In-stream works will be avoided from October to June, and any temporary culverts will be designed to maintain fish passage according to CIRIA and IFI guidelines. Different watercourses are subject to different restrictions. With these mitigation measures employed, potential impacts on the receiving water environment will be reduced to negligible levels, making the significance of environmental effects imperceptible. During the operational phase, general water quality issues related to maintenance and hydromorphological impacts will be addressed to ensure compliance with Water Framework Directive (WFD) objectives. Maintenance impacts are expected to be negligible, and no further mitigation is proposed. The WFD Assessment concludes that there will be no risk of deterioration in the status of the Burnfoot_020, Skeoge_010, and Inch Lough water bodies, indicating that the Proposed Scheme will not adversely affect ecological status or hydromorphological conditions. Predicted changes in river processes are also deemed negligible, with no significant effects expected on existing morphology.
Chapter 11 SOILS, GEOLOGY AND HYDROGEOLOGY	
Earthworks excavation Site establishment clearance Temporary construction compounds and works access Removal and creation of embankments Construction of sheet piled walls and reinforced concrete walls Culvert and culvert inlet upgrades Bridge replacement Drainage	The following mitigation measures will be implemented during construction to manage soil and environmental impacts: • Topsoil will be stripped and stored on site prior to reuse; • In order to control dust and soil erosion, excavated soils will be transported short distances from the point of extraction and will be used locally for embankment construction, where possible. Excavated material will not be stored in excessive mounds on the site and will only be stored outside of designated ecology sites and at least 10m from a watercourse or drain gully; • All plant and machinery will be serviced before being mobilised to site; • No plant maintenance will be completed on site, any broken down plant will be removed from site to be fixed;

Potential Impact	Summary of Proposed Mitigation
	• Refuelling will be completed in a controlled manner using drip trays at all times; • No bulk chemicals will be stored within the active construction areas; • Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken offsite where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 10 metres from any temporary or permanent drainage features; • Fuel containers will be stored within a secondary containment system, e.g. bunds for static tanks or a drip tray for mobile stores; • Containers and bunding for storage of hydrocarbons and other chemicals will have a holding capacity of 110% of the volume to be stored; • Ancillary equipment such as hoses and pipes will be contained within the bund; • Taps, nozzles or valves will be fitted with a lock system; • Fuel and chemical stores including tanks and drums will be regularly inspected for leaks and signs of damage; • Drip-trays will be used for fixed or mobile plant such as pumps and generators in order to retain oil leaks and spills; • Only designated trained operators will be authorised to refuel plant on site; • Procedures and contingency plans will be set up to deal with emergency accidents or spills; and, • An emergency spill kit with oil boom, absorbers etc. will be kept on-site for use in the event of an accidental spill. A specific team of staff will be trained in the use of spill containment. Should any unexpected contaminated materials be encountered during earthworks, any new contamination will be fully investigated in accordance with Land Contamination Risk Management (LCRM). These measures aim to minimize environmental impacts and ensure safe construction practices.
Chapter 12 NOISE AND VIBRATION	

Potential Impact	Summary of Proposed Mitigation
Construction plant and machinery noise and vibration Operational Noise and Vibration	A detailed CEMP, including specific Noise Management Plan will be undertaken by final appointed contractor of the Proposed Scheme. The CEMP and subsequent noise management plan will set out the mitigation measures that will be employed to reduce the noise and vibration impacts of the development during the construction phase. Construction noise has been predicted on a worst-case scenario, (i.e., all the sources are operating all the time close to the receptors). In practical terms, the sources will be distributed throughout the construction working areas and in operation on a cyclical basis, depending on specific tasks. The contractor will implement a programme of noise management measures that will include; engagement with the community on the activities that need to be carried out, the timing and duration of such activities, commitment to specific hours of work and the use of quiet work methods such as the selection of low-noise plant and operating methods. Donegal County Council and potentially affected residents will be kept informed of the works to be carried out and of any proposals for work outside normal hours. Construction noise barriers are an effective method in construction noise management, control, and work best when paired with other best practices such as utilisation of quieter construction plant, effective work activity scheduling, working within construction hours, and ensuring construction plant/equipment is maintained and in good repair. While construction site noise cannot be eliminated, communicating with the residents is crucial to increasing awareness and tolerance. Specific construction good practice measures from BS5228 will be implemented by the contractor as listed below: 1. Specific construction good practice measures from BS5228 will be implemented by the contractor as listed below Ensuring that mechanical plant and equipment used for the purpose of the works are fitted with effective exhaust silencers and are maintained in good working order; 2. Careful selection of quiet plant and machinery to undertake the required work where available; 3. Machines in intermittent use will be shut down in the intervening periods between work; 4. Ancillary plant such as generators, compressors and pumps will be placed behind existing physical barriers, and the direction of noise emissions from plant including exhausts or engines will be placed away from sensitive locations, in order to cause minimum noise disturbance. Where possible, in potentially sensitive areas, temporary construction

Potential Impact	Summary of Proposed Mitigation
	barriers or enclosures will be utilised around noisy plant and equipment; 5. Handling of all materials will take place in a manner which minimises noise emissions; and 6. Audible warning systems will be switched to the minimum setting required by the Health & Safety Authority. The use of the proposed construction noise mitigation measures will ensure that construction noise levels are controlled to the lowest levels practicable. Construction working hours will take place as follows: • Mon-Fri: 08:00 to 19:00 • Sat: 08:00 to 13:00 • No construction activities will take place on Sundays and Bank Holidays. Deviation from these times will only be allowed in exceptional circumstances where prior written approval has been received from Donegal County Council. Mitigation in the form of timely and effective stakeholder consultation is outlined within the environmental CEMP. This would ensure that residents are kept informed of on-going and future operations. For example, local residents would be informed by letter drop of proposed works, particularly where these are due to occur outside standard working hours. The letter would include details of proposed cause, start dates and duration of works to be carried out. The appointed contractor will record all complaints. The appointed contractor will investigate the circumstances and ensure the necessary corrective measures are taken. Prior to the commencement of construction, the contractor will set out and agree a schedule of noise and vibration monitoring with Donegal County Council to include the number and locations at which monitoring will be carried out, the frequency and duration of the monitoring and the reporting of results. Construction noise monitoring will be undertaken as part of noise control planning at nearby sensitive receptors. The need for monitoring of construction noise during key periods of the construction programme for Proposed Scheme will be discussed in consultation with Donegal County Council.
Chapter 13 AIR QUALITY AND CLIMATE	
Construction Dust Greenhouse Gases Climate Change Resilience	• Site roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced roads shall be restricted to essential site traffic only;

Potential Impact	Summary of Proposed Mitigation
	• Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions (also applies to vehicles delivering material with dust potential); • Public roads outside the site shall be regularly inspected for cleanliness, and cleaned as necessary; • Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind; • Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods; • All vehicles which present a risk of spillage of materials, while either delivering or removing materials, will be loaded in such a way as to prevent spillage on to the public road; and • It will be required that all vehicles be suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum. With the mitigation measures as outlined implemented in the construction phase, the levels of dust generated are assessed to be minimal and are unlikely to cause an environmental nuisance. With respect to vehicle emissions and materials, the following mitigation measures can help in reducing the GHGs emission to the atmosphere such that impacts will be negligible and not significant: • Consultation with a wider variety of internal and external stakeholders to ensure all relevant information is included in the development of the plans. • Implementation of a Traffic Management Plan, which will be prepared in advance of the construction works and which will form part of the specification for the construction works. This will outline measures to minimise congestion and queuing, reduce distances of deliveries and eliminate unnecessary loads; • Visual monitoring of plant by operatives to ensure no black smoke is emitted other than during ignition (emissions to air controlled); and • Ensuring exhaust emissions are maintained to comply with the appropriate manufacturer's limits (emissions to air controlled); and • Reducing the idle times by providing an efficient material handling plan that minimizes the waiting time for loads

Potential Impact	Summary of Proposed Mitigation
	and unloads. Reducing idle times could save up to 10% of total emissions during construction phase; • Turning off vehicular 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. Technical inspection of vehicles to ensure they will perform the most efficiently. To ensure climate resilience, three climate change adaption pathways were considered for the Burnfoot FRS and a Climate Change Adaptation Plan has been included in Appendix 13.1 of the EIAR. Due to the nature and scale of the scheme, no future monitoring is required in relation to air quality during the operational stage.
Chapter 14 MATERIAL ASSETS	
Impact on Material Assets	A temporary road will be constructed to ensure no impact will arise upon traffic flow in Burnfoot. No monitoring is proposed for the operational phase of the Proposed Scheme
Chapter 15 CULTURAL HERITAGE	
Impact on buildings, monuments site or objects of historical significance	• Preservation by avoidance is the principle mitigatory measure applicable to the Cultural Heritage resource. Where avoidance in whole or in part via design refinement has been exhausted, recourse to preservation in situ or preservation by record shall be the primary applicable mitigation measures, subject to statutory agreement. • For instances where the cultural heritage receptor cannot be avoided but can be incorporated into the Proposed Scheme footprint, without additional ground reduction, drainage measures, or amenity impact such that preservation in situ can avoid or reduce the level of impact, this measure shall be adopted (subject to statutory agreement). In principle, given the continued sub-surface site preservation (although altered site context), this shall provide a lesser residual significance of effect on same. • For instances where the cultural heritage receptor cannot be incorporated into the Proposed Scheme footprint, preservation by record shall be adopted (subject to statutory agreement). This shall involve a full and detailed licenced archaeological excavation (archaeological sites, vernacular and industrial heritage structures) and (extant) built heritage

Potential Impact	Summary of Proposed Mitigation
	survey records (written, drawn and photographic). In principle, given the creation of a full and detailed archaeological and built heritage record, the results of which shall be publicly accessible and disseminated, this shall provide a lesser residual significance of effect on same. • For instances where the cultural heritage receptor is located outside the Proposed Scheme footprint but within any lands made available for temporary works areas during construction, designation of exclusion zones appropriate to the extent and sensitivity of the receptor will be applied. • Table 15.10 and Table 15.11 in Chapter 15 of the EIAR outline the detailed mitigation for each cultural heritage receptor during the construction and operational phases, respectively. Slight significance of effect on the railway, Tooban Junction and Skeoge embankment will be marginally offset by the design facilitating the provision of a pathway to facilitate the proposed Northwest Greenway, at new embankment area to rear of old Burnfoot Mart, should the route of the Greenway follow this embankment. There are no predicted significant impacts on the Cultural Heritage resource that will require monitoring as part of any future maintenance regime for the Proposed Scheme.
Chapter 16 LANDSCAPE AND VISUAL	
Construction of a replacement road bridge, upgrades to existing culverts, earth embankment, flood wall and sheet piled wall within the environs of Burnfoot	• No specific landscape mitigation measures have been proposed as part of the Proposed Scheme as no significant landscape and visual effects have been predicted. • The design of the proposed scheme has “built-in” mitigation through steps such as revegetating embankments, retaining vegetation and existing boundaries as far as possible and use of local building materials. • No monitoring and maintenance measures are proposed in relation to landscape and visual effects.
Chapter 17 WASTE	
Generation of Construction and Demolition related waste	A comprehensive structural survey will be conducted to determine the appropriate demolition method for the existing R238 Bridge. This survey will identify high-value waste materials, such as metals, which will be removed and sorted for potential reuse or recycling. Demolition debris will be categorized on-site into masonry materials, metals, timber, and hazardous waste. The storage and reuse of demolition or excavation waste may require compliance with waste licensing regulations. If waste is stored on-site for future reuse, it will be subject to a Waste

Potential Impact	Summary of Proposed Mitigation
	Management Licence Exemption, with strict limits on the amount stored. The appointed contractor, under the oversight of Donegal County Council, will consult with the EPA to ensure all necessary licenses and permits are in place before construction begins. Contractors will be responsible for managing all waste generated during the project, ensuring that waste is transported and disposed of by licensed carriers in accordance with national legislation. The project design will include dedicated space for waste segregation and storage, with separate compounds for different construction phases to minimize community disruption. A Waste Management Plan (WMP) will be developed and implemented by the contractor, detailing procedures for waste management and pollution control. This plan will be a living document, updated throughout the construction phase, and will align with EPA guidelines. Key waste management strategies include: • Identifying waste disposal and reuse methods. • Choosing building materials to minimize waste. • Identifying potential markets for recycling and disposal. • Ensuring all waste is recycled or reused where possible. • Segregating waste at the source, including hazardous materials. • Implementing measures to control material quantities and reduce packaging. • Using a 'just in time' delivery system to prevent stockpiling. • Training staff on waste management procedures. The Waste Management Plan (WMP) will promote sustainable development and resource optimization, and all contractors will be contractually obligated to adhere to it and relevant legislation throughout the project. All waste generated during the construction phase will be systematically recorded and reviewed regularly to facilitate ongoing analysis aimed at minimizing landfill waste, increasing recycling rates, and reducing overall waste. Waste will be stored securely on-site, with the appointed contractor responsible for monitoring storage amounts to ensure compliance with permitted limits. An Environmental Co-ordinator will be appointed to oversee waste management throughout the construction stage. This

Potential Impact	Summary of Proposed Mitigation
	individual will be trained in record-keeping, auditing, and establishing waste management targets. They will also provide training for site staff on the WMP, including waste segregation and storage methods, with a focus on hazardous materials if necessary. Records will be maintained for all waste leaving the site, whether for reuse, recovery, recycling, or disposal. The Environmental Co-ordinator will track waste movements and obtain signed documentation from licensed waste contractors for each type of waste removed. This system will be integrated with delivery records to ensure accountability. If any waste movements are unaccounted for, investigations will be conducted to identify the reasons. The waste management strategies will be reviewed to identify areas for improvement in waste reduction. Midway through the construction phase, the Environmental Co-ordinator will conduct a waste audit, reviewing all records of waste generated and transported off-site. A final report will be prepared at the end of the construction phase, summarizing the waste management outcomes and total figures for recycling, reuse, and recovery achieved during the project. No mitigation measures required as no waste will be generated for duration of operational phase of the Proposed Scheme.
Chapter 18 RISK OF MAJOR ACCIDENTS AND DISASTERS	
Risk of Major Accidents and Disasters	The Health and Safety and Construction Management Plan will ensure major accidents and disasters are avoided during construction. There is no requirement for specific mitigation for Major Accidents or Hazards during the construction stages of the Proposed Scheme given that the only significant impacts are considered to be positive. Post construction, the Proposed Scheme will be monitored and maintained by Donegal County Council to ensure it continues to achieve its objectives.
Chapter 19 AGRICULTURE	
To minimise disruption to agricultural land use during construction, a range of mitigation measures will be implemented	• Working areas for embankment removal and construction will be clearly defined and kept as narrow as practical (typically 20–50 m) to reduce the footprint and avoid encroaching onto the agricultural land.
During and after construction, the following measures will be put in place to ensure that land use impacts	• Stock-proof fencing will be installed where required to maintain livestock containment and farm boundary integrity during works.

Potential Impact	Summary of Proposed Mitigation
remain minimal and consistent with the design intent	• Access to agricultural land will be maintained, with temporary upgrades to internal farm roads where necessary to support machinery. These routes will be reinstated to their original condition following construction. • Topsoil and subsoil handling will follow best practice to prevent compaction and facilitate full reinstatement of productive land after works. • Excavated material will be reused elsewhere on the scheme where appropriate. Any material unsuitable for reuse or identified as contaminated will be removed and disposed of in accordance with the scheme's Waste Management. • Construction timing will be managed to avoid sensitive ecological windows, particularly in relation to river habitats and wintering bird activity, while also ensuring that works in agricultural areas are completed efficiently within the overall 18-month programme. • Regular site inspections will be carried out to ensure the protection of agricultural boundaries, fencing, and access routes during construction. • Post-construction inspections will confirm that land has been reinstated to a condition suitable for continued agricultural use. • Drainage and flood behaviour monitoring will be undertaken in key areas where embankments have been removed, to assess any changes in flood extent or duration under severe events. This will allow for early identification of any issues that could affect land use. • Feedback from the landowner will be considered, particularly in relation to grazing access, flood behaviour, or soil conditions following the completion of works.

4 MANAGEMENT OF ENVIRONMENTAL IMPACT

4.1 Biodiversity and Invasive Species Management

All site-specific mitigation measures outlined in Chapter 21 of the EIAR, Table 6.1 of the NIS and in Table 3-1 of this CEMP shall be adopted to ensure the protection of biodiversity during the construction works.

To mitigate the introduction of new invasive species and the spread of existing invasive species on the site, an invasive species management plan (ISMP) shall be prepared in advance of any development on site. The ISMP is a 'live' document and will be updated to reflect ongoing treatment. Specifically, the introduction of new invasives will be mitigated against by washing all plant which will be used for the earthworks (excavators, dumpers etc) before coming onsite. Prevention of their spread to the protected areas will be ensured by prohibition of any vehicles from exiting the site towards the protected area. Where required treatment of invasive species will be undertaken for the duration of the works to avoid any spreading as a result of the works.

The implementation of management and mitigation measures for Terrestrial and Aquatic Biodiversity will ensure there will be no significant effects from the Proposed Scheme as outlined further in Chapter 6 and 7 of the EIAR. Management and mitigation measures for Terrestrial and Aquatic Biodiversity is as follows:

4.1.1 Biodiversity Management and Mitigation Measures

4.1.1.1 Aquatic Biodiversity

Works at the Burnfoot River and Carnashannagh Stream during both construction and operational phases and focuses on sediment control, pollutant prevention, fish passage, disturbance avoidance, and monitoring. The contractor is responsible for design and site measures, an ECoW is required to oversee environmental good practice and monitoring, and Inland Fisheries Ireland (IFI) must be consulted where approvals or timing derogations are needed.

All in-stream works in the Burnfoot River must follow IFI's "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016),". An ERP for spills, pollution-control measures, a monitoring plan, and a clear description of the ECoW's duties shall be developed. In salmonid rivers such as the Burnfoot, in-stream works should be scheduled during July–September unless IFI grants approval for an alternative timing. Works must avoid the downstream smolt migration period, which generally occurs in April–May and has been verified as occurring in May in this system. Timing decisions must also take account of the migratory, spawning and early life stages of Atlantic salmon, lampreys, European eel, and sea trout/brown trout. Although the Carnashannagh Stream does not support fish and is therefore less constrained by IFI timing windows, any works outside the recommended salmonid window must use appropriate drainage and sediment controls.

The contractor must design and install a temporary drainage scheme based on SuDS principles, incorporating measures such as ground infiltration, settlement ponds and silt fencing to treat construction runoff and any temporary discharges. Continuous turbidity monitoring should be undertaken for one month

prior to construction to establish a baseline and to set trigger thresholds. Alarmed trigger values should prompt reactive measures such as shutting off settlement-pond outflows. This CEMP shall require the ECoW to inspect all outfalls weekly and to monitor water chemistry (including colour, turbidity as a proxy for total suspended solids, nutrients, BOD, ammonia, total phosphorus and total petroleum hydrocarbons) at predefined sites, with monitoring frequency varying from continuous to monthly depending on location. Within 12 months of scheme completion, a qualified ecologist should be appointed to undertake macroinvertebrate monitoring upstream and downstream of the works to compare post-construction values with the pre-construction baseline.

To reduce the risk of runoff of hydrocarbons, concrete and other pollutants, on-site fuel storage should be minimised and refuelling undertaken using mobile double-skinned bowsers according to a defined refuelling protocol. Fuel storage tanks must be bunded to at least 110% capacity and refuelling should occur at least 50 m away from any watercourse. Contained areas must be provided for concrete pours, dedicated rinse-down areas should be established for plant and equipment, and designated concrete-rinse locations should be used to limit wash-off. Tool-box talks should be provided to all plant personnel to raise awareness of sensitive receptors and the risk of water pollution. These design and management measures should be implemented alongside good site practices consistent with EPA Integrated Pollution Prevention and Control procedures. The ECoW shall oversee the development and implementation of the ERP and manage the response to any serious pollution incident.

Temporary crossings and temporary bridge works on the Burnfoot River must be designed and positioned to preserve fish passage and avoid sensitive spawning gravels and resting-pool habitat; consultation with IFI is required and temporary structures should meet IFI guidance. Where a temporary bridge is used upstream of the existing Burnfoot Bridge, a clear-span structure (for example, greater than 5 m) is required so that placement and removal do not impact riverbed depth or the spawning gravels. Temporary crossings on the Carnashannagh Stream are not expected to affect fish passage because no fish are present there.

Where in-channel works present a risk of crushing or displacing fish in the Burnfoot Bridge area, fish capture and translocation shall be carried out prior to works commencing. Authorisation under Section 14 of the Fisheries Act must be obtained from IFI and translocation must be performed by competent fisheries specialists. Applications for authorisation shall be made at least 12 weeks before the start of in-channel works.

Large-scale piling adjacent to the main Burnfoot River, including works for flood walls at locations mapped with spawning gravels, must be avoided during the main salmonid spawning and egg incubation period and the primary smolt migration period; piling in these areas should not occur from October through May. Outside these sensitive periods, vibrohammers are preferred over percussive impact drivers for piling close to the Burnfoot River to reduce shock effects on aquatic fauna.

For operational-phase considerations, replacement of the Burnfoot Bridge with a clear-span structure is expected to have a neutral effect on fish passage, and the proposed extension of the Carnashannagh culvert by approximately 20 m is also expected to be neutral because the existing culvert is currently impassable due to an inlet drop and natural slope. Where bottomless culverts are considered, they may

provide a slight beneficial habitat effect if overall stream habitat restoration is undertaken; such design options should be considered where feasible.

In terms of roles and reporting, the contractor is responsible for delivering the temporary drainage/SuDS, ERP, concrete and fuel management systems, and for scheduling works to avoid sensitive biological windows. The ECoW is responsible for weekly outfall inspections, implementing the monitoring programme, overseeing the ERP and reporting incidents. Fisheries specialists must carry out any fish rescue and translocation under IFI Section 14 licences, and IFI consultation is required for any timing derogations or temporary works that could affect fish passage. A qualified ecologist must be appointed within 12 months of completion to undertake macroinvertebrate monitoring and report findings against the pre-construction baseline.

4.1.1.2 Terrestrial Biodiversity

Best-practice measures will be deployed to avoid or minimise adverse effects on designated sites (Lough Swilly SAC and Lough Swilly SPA) through strict water-quality controls, habitat protection and adherence to recognised guidance. Construction activities will follow relevant guidance including CIRIA good-practice guidance on control of water pollution from construction sites, NetRegs GPPs, IFI fisheries guidance and COSHH requirements for handling hazardous materials. All fuel, oil and chemical storage will be sited on an impermeable base within appropriately sized bunding, secured and managed in accordance with NetRegs guidance.

Works that could cause aerial noise or visual disturbance to birds associated with the Lough Swilly SPA will be scheduled to avoid the wintering season where practicable. Major works that affect the western and southern flood embankments and removal of embankments along the Burnfoot and Skeoge Rivers should be undertaken outside the October–March wintering period, while works east of Burnfoot Bridge and immediate western flood-wall construction, where wintering bird use is limited, may proceed with fewer timing restrictions. Night-time working and artificial lighting will be minimised as much as possible near watercourses to reduce disturbance to otters and to foraging or commuting bats. Where lighting is essential it will be designed and directed to minimise light spill onto banks and the water.

To reduce habitat fragmentation and improve connectivity for otter, the replacement Burnfoot Bridge will be designed to provide safe passage where feasible. The bridge design approach is a full-span structure that maintains dry ledges or incorporates a shelf, culvert or platform to allow otter passage during typical and low-flow conditions and to provide refuge through many flood events. While accommodating otter passage under all extreme flood scenarios may not be possible due to flash flooding, providing passage in most conditions will represent a significant improvement over the existing situation and will mitigate the fragmentation risk.

The risk of spreading invasive non-native species will be actively managed through implementation of the ISMP as outlined above (section 4.1). The ISMP sets out options for control, eradication or containment of Japanese knotweed, Salmonberry and other recorded invasive species and specifies hygiene protocols for machinery, material handling and disposal to prevent inadvertent transfer via the hydrological pathway.

With diligent application of the ISMP measures, the potential for spread into downstream designated sites is expected to be mitigated.

Vegetation clearance will be timed to avoid the bird breeding season where practicable, with all clearance of suitable nesting habitat undertaken between 1st September and 28th February to prevent impacts on nesting birds. If vegetation removal during the breeding season is unavoidable, ecological supervision, pre-clearance checks and mitigation measures required by the appointed ecologist will be implemented to avoid nest destruction and disturbance.

Biodiversity protection on site will be supported by appointment of an ECoW or similarly competent ecological advisor to oversee delivery of mitigation measures, supervise invasive-species controls, verify compliance with storage and pollution-prevention measures, and advise on timing and site practices to avoid disturbance to protected species. The ECoW will liaise with statutory authorities as necessary and will ensure implementation of COSHH, spill-response and pollution-prevention plans.

Potential impacts on bats are expected to be limited to temporary disturbance from lighting during construction. These impacts will be minimised by applying the lighting controls as described above. Where feasible, opportunities for biodiversity enhancement will be taken, for example by incorporating bat roosting features (including boxes suitable for Daubenton's bat) into the new Burnfoot Bridge structure. For otter, design and construction measures will prioritise provision of dry passage and refuge and will avoid unnecessary bank disturbance. Where bank works are unavoidable, timing and methods will be selected to reduce disturbance and preserve key commuting routes.

4.2 Surface Water Management Plan

4.2.1 Introduction

The appointed contractor will also be required to develop a detailed Surface Water Management Plan (SWMP) in advance of works commencing on site. The objective of the SWMP is to ensure that the mitigation measures specified in Chapter 21 of the EIAR are adhered to and that a monitoring regime is put in place to confirm the efficacy of the mitigation measures implemented so as to further safeguard the receiving water environment.

Temporary impacts on water quality have the potential to occur during the construction phase of the works. Mobilised suspended sediment and cement release through construction activities are the principal potential sources of water quality impact. The following have been considered in assessing the mitigation measures required:

- Increased suspended sediment levels due to the accidental release of sediment to the water column during:
    - Demolition of existing structures;
    - Construction of flood walls and embankments;
    - Cut and fill operations;

- Accidental release of highly alkaline contaminants from concrete and cement during the demolition of buildings and structures and the construction of hardstand areas such as new flood walls etc.
- General water quality impacts associated with works machinery, infrastructure and instream operations including the temporary storage of construction materials, oils fuels and chemicals.

Detailed mitigation has been incorporated into the engineering design of the Project to minimise its potential impact on the water environment as outlined in Chapter 21 of the EIAR (Summary of Mitigation Measures) and Table 6.1 of the NIS. Indeed, most potential impacts to water quality posed by this project during construction will be dependent on the quality of drainage and treatment of site run-off. Therefore procedures will be put in place for the control and the minimisation of surface water and suspended solids movement. Measures will also be taken to ensure existing drainage pathways are kept free from construction sediment and pollutants through the use of effective barriers to pollutant export and best practice techniques to control these pressures at source. Mitigation measures to be employed on site during the Project construction are described next.

4.2.2 Construction Phase Best Practice Measures

General Construction Works

The risk of water quality impacts associated with works machinery, infrastructure, and on-land operations (for example leakages/spillages of fuels, oils, and other chemicals and waste water) will be controlled through good site management and the adherence to codes and practices which limit the risk to within acceptable levels. The contractor will implement the following measures during construction:

- A Construction and Environment Management Plan has been prepared as part of the planning submission and will be developed further in advance of construction by the contractor and implemented during the construction phase. It will include detail in respect of every aspect of the works in order to minimise potential impacts and maximise potential benefits associated with the works;
- Management and auditing procedures, including tool box talks to personnel, will be put in place to ensure that any works which have the potential to impact on the aquatic environment are being carried out in accordance with the contractors environmental controls, which will be consistent with an approved CEMP and any planning conditions;
- Existing and proposed surface water drainage and discharge points will be mapped on the Drainage layout. These will be noted on construction site plans and protected accordingly to ensure water bodies are not impacted from sediment and other pollutants using measures to intercept the pathway for such pollutants. The contractor will develop a SWMP in the detailed CEMP and ensure the controls outlined in this section are illustrated on the Plan, e.g. location of site compound, wash out areas and water treatment areas (where these are required);
- Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the Proposed Scheme. The offices and site amenities will initially need to have their own foul water collection until connections are made to the main networks.

The measures outlined in the following sections will be put in place during the construction phase to ensure protection of surface waterbodies. Construction works will be informed by best practice guidance from Inland Fisheries Ireland on the prevention of pollution during development projects and other industry best practice guidelines as listed below:

- Good practice guidelines on the control of water pollution from construction sites developed by the Construction Industry Research and Information Association (CIRIA, 2001);
- NetRegs Guidance for Pollution Prevention series (GPP), in relation to a variety of activities developed by the Environment Agency (EA), the Scottish Environmental Agency (SEPA) and the Northern Ireland Environment Agency (NIEA);
    - GPP 2: Above ground oil storage tanks
    - GPP 3: Use and design of oil separators in surface water drainage systems
    - GPP 5: Works and maintenance in or near water
    - GPP 6: Working at construction and demolition sites
    - GPP 8: Safe storage and disposal of used oils
    - GPP 13: Vehicle washing and cleaning
    - GPP 20: Dewatering underground ducts and chambers
    - GPP 21: Pollution incident response planning
    - GPP 22: Dealing with spills
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).

4.2.3 Pollution Control

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented form directly entering into any water courses as no construction will be undertaken directly adjacent to open water.

No significant dewatering will be required during the construction phase which would result in the localised lowering of the water table. There may be localised pumping of surface run-off from the excavations during and after heavy rainfall events to ensure that the excavation are kept safe and relatively dry.

4.2.3.1 Management of suspended solids in run-off

Prior to the commencement of topsoil stripping and earthwork operations, the following site-specific surface water management measures will be put in place:

1. If possible, earthwork operations shall be limited to the drier months.

2. The site shall be surveyed to identify all existing drainage features and waterbodies. The contractor will be expected to satisfy themselves of the location of these and to provide the identified protection as a minimum, i.e., installation of silt fencing between the site and the watercourse and prohibiting the storage of chemicals or stockpiles within the identified buffer zone.

3. As a minimum silt fencing will be installed to provide a barrier for surface water run-off to these drainage channels. The requirement for additional silt fencing will be determined in the construction stage CEMP and will be subject to a detailed assessment of the area or phase to be developed. The purpose of the silt fencing is to prevent silt laden water leaving the site and entering neighbouring land with the potential to impact nearby watercourses. A typical silt fence detail is shown below in Figure 4.1. It will consist of a geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site. Silt fences will be monitored and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections membrane and removal of a build-up of silt on the upslope side of the fence.

Figure 4.1: Silt Fencing (www.geosyn.co.uk)

4. Drainage ditches may be cut to intercept surface water where there is a risk of significant water flow into excavations or on to adjoining lands. Whilst the design depths of proposed infrastructure are to be optimised to existing excavated levels so that excessive excavations are avoided where possible there may be a requirement to periodically pump water from excavations. In the event that dewatering of foundations or drainage trenches is required during construction and/or discharge of surface water from sumps, a treatment system prior to the discharge will be used; silt traps, settlement skips etc. This measure will allow additional settlement of any suspended solids within storm water arising from the construction areas and ensure that it is of adequate quality for discharge to receiving waters.
5. At this stage the treatment method cannot be specified as it will depend on the contractors preferences, the volume and nature of the water collected and the available space within the working area to provide treatment. Some of the options that will be considered in the management of run-off will include:
    a. appropriately sized settlement ponds to remove suspended solids (Figure 4.2);

b. Settlement tanks, e.g., siltbuster lamella settlement tanks (Figure 4.3);
c. Sediment/silt filter bag (Figure 4.4).

Figure 4.2: Multi stage Settlement Pond (Scottish Renewables, 2019)

Figure 4.3: Settlement Tank, silt buster lamella settlement tanks (https://www.siltbuster.co.uk)

Figure 4.4: Dewatering bag (https://www.murlaconline.co.uk)

6. Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.
7. Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.
8. The site manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.
9. Any temporary storage of soil, hardcore, crushed concrete or similar material will be stored as far as possible from any surface water drains and at least outside of the drainage feature buffer zone. There can be no direct pumping of silty water from the works directly to any watercourse. All water from excavations must be treated by infiltration over lands or via settlement areas, silt busters etc. as outlined above.
10. Locations of all temporary discharge points will also be indicated on the SWMP will be updated as required over the lifetime of the project.
11. Locations of mitigation structures will be indicated on the SWMP which will be updated as required over the lifetime of the project.
12. Volumes and points of discharge of clean or treated water will be managed to prevent erosion of banks or scour in receiving waters.
13. Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:
    a. Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
    b. Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only;

c. A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate;

14. Road sweepers will be employed to clean the site access route as required.

4.2.3.2 Control of cement run-off

The washing out of concrete delivering vehicles is a potential source of pollution and shall either be carried out:

1. On return to the batching plant (preferred option); and
2. In designated wash out areas on site.

The use of concrete in close proximity to water bodies requires a great deal of care. Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution in water bodies. It is essential to ensure that the use of wet concrete and cement in or close to any water course is carefully controlled so as to minimise the risk of any material entering the water, particularly from shuttered structures or the washing of equipment. The following measures will be undertaken to mitigate against possible pollution:

- A concrete washdown area will be provided on site for trucks to use after delivery of concrete or on return to the batching plant. This area will be adequately bunded to mitigate the risk of contaminated runoff discharge to the Burnfoot and Skeoge river water bodies. Concrete trucks are to be washed down within the concrete truck washdown area after delivery of concrete, prior to exiting the site. Washdown runoff will be appropriately treated prior to discharge;
- Wash-out areas on site will be professionally designed with an impermeable liner to contain all cement laden wate. No wash-out of ready-mix concrete vehicles shall be located within 10 metres of any temporary or permanent drainage features. Signage shall be erected to clearly identify the wash out areas. Sufficient wash out areas shall be provided to cater for all vehicles at peak delivery times.

Figure 4.5: Concrete wash-out area with impermeable liner (TII)

4.2.3.3 Accidental Spills and Leaks

The use of oils and chemicals on-site requires significant care and attention. The following procedures will be followed to reduce the potential risk from oils and chemicals:

- New metal gerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site. Metal gerry cans and any other items of fuel containers will be stored in certified metal bunded cabinets.
- Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum, which will be stored within the bund.
- Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work.
- No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks may be kept in the material storage area in suitable containers and will be stored on appropriately bunded spill pallets as required. Any fuel and oil stored onsite shall be stored on bunded spill pallets approved under BS EN 1992-3:2006. All bunds will be impermeable and capable of retaining a volume of equal to or greater than 1.1 times (>10%) capacity of the containers stored on them. In the event of a filling spillage excess oil or fuel will be collected in the bund.
- Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will be undertaken offsite where possible. Where this is not possible, filling and maintenance will take place in a designated material storage compound, which is located at least 10 metres from any temporary or permanent drainage features. Spill protection equipment such as absorbent mats, socks and sand will be available to be used in the event of an accidental release. Training will be given to appropriate site workers in how to manage a spill event. A certified double skinned metal fuel tank will be situated in this secure bunded area on the construction site if applicable. This tank will be certified for lifting when full.
- An early warning system will be in place in the unlikely event of a breach in the flood embankments. This will allow measures to be taken to remove oil and chemicals from areas at risk of flooding after a breach scenario.
- Contingency Planning: A project specific Pollution Incident Response Plan will be prepared by the contractor and will refer to GPP 21 Pollution Incident Response Planning. The contractor's Environmental Manager will be notified in a timely manner of all incidents where there has been a breach in agreed environmental management procedures. Suitable training will be provided by the contractor to relevant personnel detailed within the Pollution Incident Response Plan to ensure that appropriate and timely actions is taken.

The following mitigation measures will be taken at the construction site in order to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- Refuelling will be undertaken off site where possible; and
- Where mobile fuel bowsers are used the following measures will be taken:
  - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
  - The pump or valve will be fitted with a lock and will be secured when not in use;
  - All bowsers to carry a spill kit and operatives must have spill response training; and
  - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

4.2.3.4 Flood Risk Assessment

The Proposed Scheme is located in an area of flood risk and during the construction period, there is a risk that the site could flood should a breach in the existing flood embankments occur. Therefore, emergency response measures will be required. In order to address the risk of potential pollution events, should a breach occur it is important to have an early warning. This will enable the site to be evacuated and closed to ensure no-one is located on the premises should a breach occur.

This is essential given the proximity of the defences and likely velocities and depths of water that would result. The following control measures will be required:

- Met Éireann provide a weather warnings alert service which is available on the Met Éireann app or through its website https://www.met.ie/. These warnings can be used during construction to manage the risk of flooding to the works from extreme events.
- Earthworks shall be exposed for the minimum time possible. Earthworks formations shall be protected by a layer of imported granular fill.
- Landscaping and seeding of the perimeter embankments and retaining structures shall be carried out as early as possible.
- An Emergency Response plan shall be developed for the site to mitigate against stockpiles or exposed earth that are at risk from flood waters.
- Emergency evacuation routes will be included in the plan to ensure that flooding does not threaten the safety of construction personnel and/or residents.

4.2.3.5 Monitoring

To ensure pollution incidents do not occur, daily inspections of implemented measures will be carried out by the site manager, with records maintained. Any significant blockage of surface water drains or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

4.3 Dust Minimisation Plan

4.3.1 Introduction

Dust emissions from the Proposed Scheme have the potential to impact on neighbouring areas in the absence of mitigation. This section outlines the mitigation measures that will be employed to reduce the dust impact on sensitive receptors. These measures are the minimum required and will form the basis of a detailed Dust Management Plan to be prepared by the contractor.

The objective of dust control at the site is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland, the UK, (IAQM(2014, BRE (2013), The Scottish Office (1996), UK ODPM (2002)) and the USA (USEPA, 1997).

4.3.2 Site Management

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be achieved through good design and effective control strategies.

At the construction planning stage, the siting activities, construction compounds and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. The contractor will consider these factors when establishing the site compound and storage areas at the construction planning stage.

Good site management will include the ability to respond to adverse weather conditions by either restricting operations on-site or quickly implementing effective control measures before the potential for nuisance occurs. When rainfall is greater than 0.2mm/day, dust generation is generally suppressed (IAQM, 2014; UK ODPM, 2002). The potential for significant dust generation is also reliant on threshold wind speeds of greater than 10 m/s (19.4 knots) (at 7m above ground) to release loose material from storage piles and other exposed materials (USEPA, 1986). Particular care shall be taken during periods of high winds (gales) as these are periods where the potential for significant dust emissions are highest. The prevailing meteorological conditions in the vicinity of the site are favourable in general for the suppression of dust for a significant period of the year. Nevertheless, there will be infrequent periods where care will be needed to ensure that dust nuisance does not occur. The following measures shall be taken in order to avoid dust nuisance occurring under unfavourable meteorological conditions:

- Site roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface while any un-surfaced roads shall be restricted to essential site traffic only;
- Any site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions (also applies to vehicles delivering material with dust potential);
- Public roads outside the site shall be regularly inspected for cleanliness, and cleaned as necessary;

- Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind;
- Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods;
- All vehicles which present a risk of spillage of materials, while either delivering or removing materials, will be loaded in such a way as to prevent spillage on to the public road; and
- It will be required that all vehicles be suitably maintained to ensure that emissions of engine generated pollutants are kept to a minimum.

4.3.3 Monitoring

The dust minimisation measures shall be reviewed at regular intervals during the works to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practice and procedures. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem.

4.4 Noise and Vibration Management

4.4.1 Introduction

This draft Noise Management Plan (NMP) details the environmental monitoring and noise mitigation measures that will be implemented during the works to minimise the effects of the site operations on environmental receptors. The draft NMP will be finalised in the event that development consent is obtained, in order to incorporate additional requirements pursuant to conditions attached to statutory consents, and methods and plant in use by the appointed Contractor.

In terms of the potential for significant effects from noise and vibration, chapter 12 of the EIAR concludes there potential for noise and vibration impacts upon properties from construction plant and equipment. Vibration from the construction of the sheet piled walls will be temporary and minimal and therefore it has been concluded that vibration from construction is not significant. No operational noise or vibration impacts resulting from the operation of the Proposed Scheme are anticipated. There will be no significant effects arising from the operational phase.

This NMP will be fully in accordance with the following documents;

- EIAR Chapter 12 Noise & Vibration and mitigation measures therein;
- British Standard BS5228:2009+A1:2014 Noise & vibration control on construction and open sites;

The purpose and aims of the NMP are to:

- Establish noise guidance criteria to be used;
- Outline the monitoring programme to be adopted including information on instrumentation, monitoring locations, monitoring procedure/methodology;

- Outline all proposed mitigation measures to control and minimise noise from all phases and areas of construction activity;
- Outline management procedures for ensuring that the appropriate mitigation measures are appropriately managed; and
- Outline procedures for liaising with public and local authority.

The proposals for noise monitoring and noise mitigation measures included in this document relate to the entire duration of the construction works associated with the Burnfoot FRS.

The draft Noise Management Plan will be finalised when Contractors are appointed, and liaison with the Local Authority has taken place with regards to approval of the updated NMP. The updated NMP will detail the specific roles and responsibilities of personnel related to the implementation of the NMP.

4.4.2 Mitigation Measures

Mitigation measures will include the requirements for best practice and adherence to the following relevant Irish policies, strategies, legislation, guidelines, or recognised international guidelines where Irish guidelines are not available.

The following mitigation measures, presented in the EIAR (Chapter 12) shall be adhered to, in compliance with British Standard BS5228:2009+A1:2014 – Noise and Vibration control on construction and open sites.

The contract documents will clearly specify the construction noise criteria included in this draft CEMP which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of *BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Noise* and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001.

Selection of Quiet Plant – This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' propriety acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site.

Noise control at Source – If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source." This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier.

Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures shall be considered:

- Ensuring that mechanical plant and equipment used for the purpose of the works are fitted with effective exhaust silencers and are maintained in good working order;
- Careful selection of quiet plant and machinery to undertake the required work where available;
- Machines in intermittent use will be shut down in the intervening periods between work;

- Ancillary plant such as generators, compressors and pumps will be placed behind existing physical barriers, and the direction of noise emissions from plant including exhausts or engines will be placed away from sensitive locations, in order to cause minimum noise disturbance. Where possible, in potentially sensitive areas, temporary construction barriers or enclosures will be utilised around noisy plant and equipment;
- Handling of all materials will take place in a manner which minimises noise emissions; and
- Audible warning systems will be switched to the minimum setting required by the Health & Safety Authority.

Construction site hoarding will be constructed around the site boundaries as standard. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

A designated environmental liaison officer will be appointed to site during construction works.

4.4.3 Noise Monitoring Programme

Construction noise monitoring will be undertaken as part of noise control planning at nearby sensitive receptors. The need for monitoring of construction noise during key periods of the construction programme for the Proposed Scheme will be discussed and agreed in consultation with Donegal County Council.

4.5 Preliminary Traffic Management Plan

A construction Traffic Management Plan (TMP) will be prepared for the site works in accordance with the principles outlined below and shall comply at all times with the requirements of:

- Department of Transport Traffic Signs Manual 2010 – Chapter 8 Temporary Traffic Measures and Signs for Roadworks
- Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
- Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & DMURS.

The appointed contractor shall prepare a Construction Transport Management Plan prior to the commencement of development. All deliverables shall be provided with instructions/directions on accessing the site.

To address the Construction Phase impacts raised, the Traffic Management Plan will ensure that construction vehicle movement will be minimised through:

- Consolidation of delivery loads to/from the site and manage large deliveries on site to occur outside of peak traffic periods;
- Use of precast/prefabricated materials where possible;

- 'Cut' material generated by the construction works will be reused on site where possible, through various accommodation works;
- Adequate storage space on site will be provided;
- A strategy will be developed to minimise construction material quantities as much as possible;
- Construction staff vehicle movements will also be minimised by promoting the use of public transport, shared use of vehicles, cycling and walking.

Contractor shall prepare a detailed traffic management plan for works at that interface with the existing road network and obtain all required road opening licences. Access for construction of the development will be via the proposed primary access for the development.

The R238 bridge replacement will involve a transport management plan to coincide with the construction of the temporary and permanent bridge. The temporary bridge will be located in the fields upstream of the existing bridge. This road will need to have a finish capable of carrying the requisite number of traffic movements per day and an appropriately requisite number of traffic movements per day and an appropriately restricted speed limit.

It is envisaged that the temporary bridge will be two traffic and a footway and facilitate traffic in both directions simultaneously. In addition, the route of the diverted R238 will likely mean that visibility for cars travelling along the L-1881 (Brae Road) will be restricted by the gable wall of the terrace properties that front onto the R238. Temporary traffic lights will therefore be required to facilitate vehicles moving from the L-1881 onto the R238.

RPS have undertaken some initial design and auto tracking to ensure the temporary bridge and approach roads are visible. This is based on the following reasonable assumptions:

- The minimum radius used on the alignment shown is a 26m radius. This would be a radius associated with a 25kph design speed. There is no 25kph design speed category within the Design Manual for Urban Roads and Streets (DMURS), so a value has been interpolated. At the southern end, a 56m radius is indicated which would be associated with a 40kph design speed. It is therefore recommended that a temporary speed limit of 25 kph be used for the temporary bridge and approach roads.
- The temporary alignment is positioned 0.5m away from the existing parapet wall and includes a 2m footway on the North-Eastern side.
- This is considered a feasibility review stage design and the temporary road alignment will need to subject to detailed design considerations and the approval of Donegal County Council – Roads.

4.6 Demolition and Construction Waste Management

The appointed contractor will also be required to develop a detailed resource and WMP in advance of works commencing on site. This will be prepared in line with EPA 'Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition projects' Published in 2021.

Specific waste management requirements include:

- Identify how the waste will be dealt with (i.e., disposal, re-use on/off site etc.).
- Building materials shall be chosen with an aim to 'design out waste.'
- Identify potential end markets e.g., reuse, recycling facilities, waste treatment facilities and disposal sites.
- All waste leaving site will be recycled, recovered, or reused where possible, with the exception of those waste streams for which appropriate facilities are currently not available.
- Segregation of waste at source where practical. On-site segregation of non-hazardous waste materials into appropriate categories, where possible, including any excavated soils, concrete, bricks, metals, and timber.
- On-site segregation of all hazardous waste materials into appropriate categories including contaminated soils, waste oil, fuels, and paints, glues, adhesives, and other known hazardous substances.
- Control measures and attention to materials quantity requirements to avoid over-ordering and generation of waste materials.
- Agreements with materials suppliers to reduce the amount of packaging or to participate in a packaging take-back Scheme.
- Implement a 'just in time' materials delivery systems to avoid materials being stockpiled, which increases the risk of the damage and disposal as waste.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site. The waste storage area(s) will be assigned and all construction staff provided with training regarding the waste management procedures on commencement of the project.
- Measures to ensure appropriate staff training and levels of awareness in relation to waste management.
- Waste streams will be collected by an appropriately licensed and permitted private waste contractor, appointed by the contractor for recycling, recovery, or disposal at suitably licensed facilities.
- Calculate the difference between expected waste quantities prior to commencement of the project and actual waste quantities after the project is complete.

The SWMP will be implemented from the outset of the project and throughout the duration of the project taking into consideration the waste management hierarchy to encourage sustainable development, circular economy, environmental protection, and optimum use of resources. The appointed contractors for the site preparation, earthworks and construction phases of the works will be contractually obliged to follow the SWMP and all relevant legislation.

4.7 Emergency Response Plan

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/PSCS and suppliers as the Proposed Scheme progresses. Where subcontractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document.

This is a working document that requires updating throughout the various stages of the Proposed Scheme.

4.7.1 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedures. All operations will have a site pack with all emergency contact details specified. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4.6. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4.6. This will be updated throughout the various stages of the project.

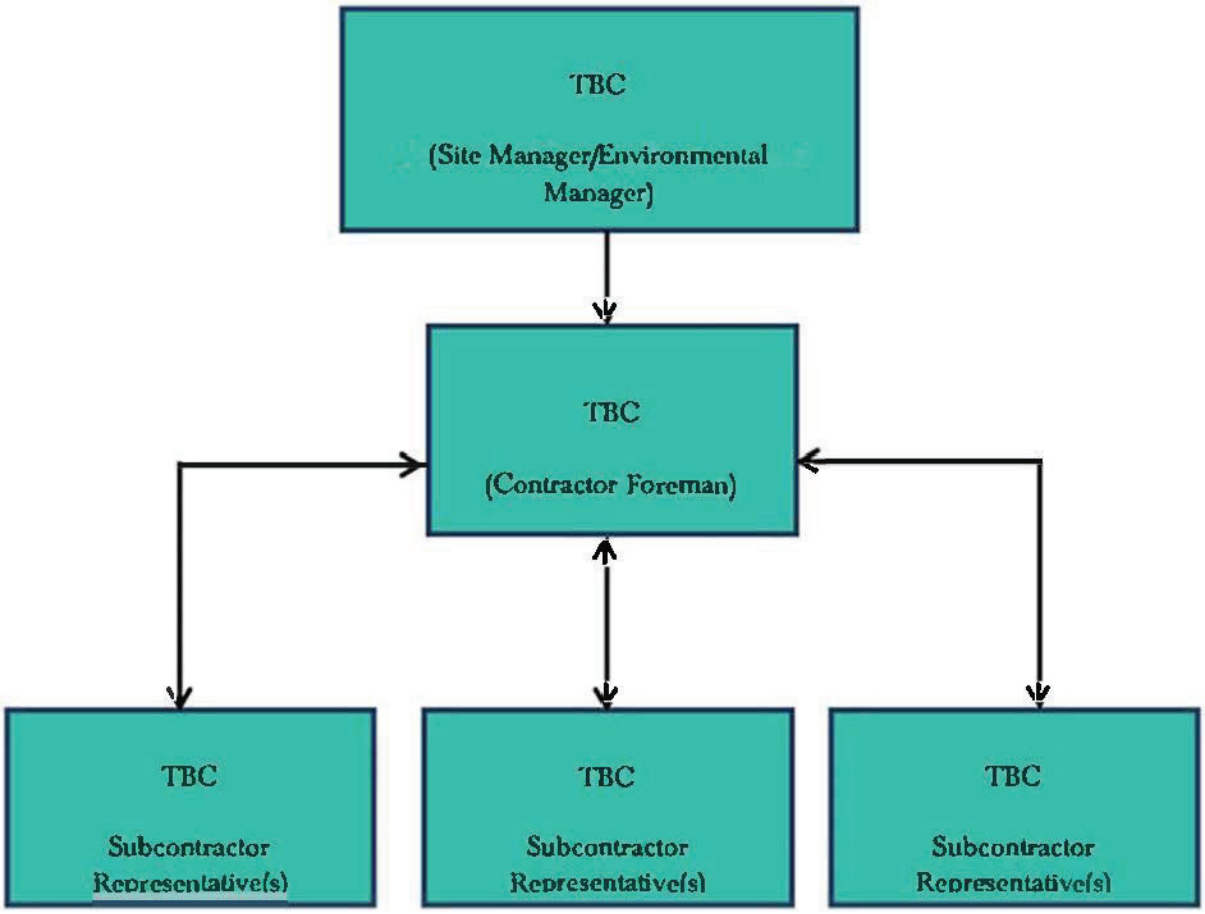

Figure 4.6: Emergency Response Procedure Chain of Command

4.7.2 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require and emergency response in the event of an occurrence (Table 4-1).

Table 4-1: Hazard Associated with Potential Emergency Situations

Hazard	Emergency Situation
Construction Vehicles: tractors, excavators etc.	Collision or overturn which has resulted in operator or third party injury.
Abrasive wheels/portable tools	Entanglement, amputation or electrical shock associated with portable tools.
Fire	Injury to operative through exposure to fire.
Sickness	Illness related to site activities of an operative e.g., heart attack, loss of consciousness, seizure

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4-1 the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, that have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that no identifiable risk exists when dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services as set out in Section 4.7.4.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g., cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g., ESB Networks the numbers for which as provided in Section 4.7.4.
- Contact the next of kin of any injured personnel where appropriate. The procedure- for this is outlined in Section 4.7.4.

4.7.3 Environmental Emergency Response Procedure

4.7.3.1 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction phase of the Proposed Scheme. Oil/fuel spillages are one of the main environmental risks that could occur on the proposed site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following procedures should be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.
- Contain the spill using the spill control materials, track mats or other material 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 or sensitive habitats.
- 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 the appropriate permits so that further contamination is limited.

- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The Environmental Manager will inspect the site and will assist by providing any advice possible to ensure the necessary containment and clean up measures are in place and prevent further spillage from occurring.
- The Environmental Manager will notify the appropriate regulatory body such as Donegal County Council and Environmental Protection Agency (EPA) etc. if deemed necessary.

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Environmental Manager must be immediately notified.
- If necessary, the Environmental Manager/Site Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures that were used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, adjacent waterbodies, protected species or designated conservation site, (pSPA or cSAC), the Environmental Manager will liaise with the Project Ecologist.
- If the incident has impacted on a sensitive receptor such as an archaeological feature the Environmental Manager will liaise with the Project Archaeologist.
- A record of all environmental incidents will be kept on file by the Environmental Manager and the Main Contractor. These records will be made available to the relevant authorities such as Donegal County Council and the EPA if required.

The Environmental Manager/Site Manager will be responsible for any corrective actions required as a result of the incident e.g., an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.

4.7.4 Contacting the Emergency Services

4.7.4.1 Emergency Communications Procedure

In the event of requiring the assistance of the emergency services the following steps shall be taken:

- Stay calm. It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.

- Know the location of the emergency and the number from which you are calling. This may be asked and answered a couple of times but do not get frustrated. Even though many emergencies call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.
- Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- If you reach a recorded message, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking a long time. There is a good chance, however, that emergency services are already being sent while you are still on the line.
- Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.
- Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- Do not hang up the call until directed to do so by the call taker.

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site.

This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

4.7.4.2 Contact Details

A list of emergency contact details are provided in Table 4-2.

Table 4-2 Emergency Contacts

Contact	Phone Number
Emergency Services - Ambulance, Fire, Garda	999/112
ESB Emergency Services	1800 372 999
Bord Gáis Emergency	1800 20 50 50
Health and Safety Authority	0818 289 389

Contact	Phone Number
	(0818 289 389 – Outside standard business hours)
Project Supervisor	TBC

4.7.4.3 Procedure for Personnel Tracking

All operatives on site must have and comply with an operational site pack that details their operation and includes contact numbers, hazard identification and emergency response procedures.

In the event of a site operative becoming involved in an emergency situation where serious injury has occurred, and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

4.7.4.4 Induction Checklist

All operatives must have a valid site pack and all operatives in advance of operations must visit the site with the site manager and go through the site pack on site.

Table 4-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

Table 4-3: Emergency Response Plan Items Applicable to the Site Induction Process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction.	
All operatives on site without exception must undergo a site induction where they will be required to provide personal contact details which will include contact information for next of kin.	

4.8 Pollution Incident Response Plan

4.8.1 Introduction

This draft Pollution Incident Response Plan (PIRP) sets out best practice for dealing with potential environmental incidents onsite. The PIRP will help to prevent or reduce environmental damage if such an incident occurs. The PIRP shall be read in conjunction the other environmental management plans presented in this CEMP which list the potential environmental impacts that may arise and the mitigation that will be implemented to prevent impact.

The draft PIRP will be finalised in order to incorporate additional requirements pursuant to conditions attached to statutory consents, and methods and plant in use by the appointed Contractor.

The purpose of this PIRP is to provide clear guidelines on responses to pollution incidents to allow a rapid and efficient response to any incident in order to minimize environmental impact or damage. It is presumed that all relevant mitigation outlined in the individual environmental management plans in this CEMP is fully and effectively implemented.

The Main Works Contractor's designated representative (Site Manager) will be responsible for coordinating the PIRP and ensuring adequate resources are available for implementation. The PIRP will ensure all appropriate and relevant resources are identified in advance and made available as quickly as possible during a pollution response event. The plan is intended for guidance purposes only and any response may be adapted depending on the specific circumstances of a particular pollution event.

4.8.2 Pollution Scenarios

The PIRP will detail the response required to address pollution events including:

- Emissions to Water
    - Sediment release
    - Wastewater release
    - Oil/chemical release
    - Concrete/cement release
- Emissions to Air
    - Odours
    - Dust

4.8.3 Key Provisions of the PIRP

The PIRP will include site and project specific pollution incident response measures including:

- Preparation of a Project Organization Chart indicating the area of responsibilities and the reporting lines of the project personnel;
- Contact details for Main Works Contractor (MWC) representatives responsible for coordinating pollution response (Site Manager);
- Personnel on site and roles in PIRP implementation;
- Date of PIRP issue and review dates;
- PIRP distribution list and number of copies and version;
- Detailed site plan;

- Detailed drainage map of the site including location of all interceptors, mitigation structures and outfalls;
- Contact details for internal and external services and agencies with a role in pollution response or stakeholders whose assets may be impacted;
- Details of chemicals held on site including maximum quantity, storage locations and containment conditions, Safety Information Data Sheets; and
- Detailed inventory of pollution prevention equipment - on and off site resources listed with calibration, service details.

4.8.4 Pollution Response Initiation

All operatives and personnel on site will comply with all relevant mitigation measures to prevent pollution outlined in the individual environmental management plans. Any person who detects a pollution incident will notify the MWC representative responsible (Site Manager).

On receipt of notification of any such incident the MWC representative will:

- Establish the nature of any spill, the source, direction of travel and quantity of material involved;
- Assess the extent, nature, and potential impact of the pollution event on the receiving environment;
- Halt the activities giving rise to the pollution if possible;
- Mobilise the pollution response team to take immediate appropriate steps to stop further pollution and contain polluting material where possible by deploying pollution control equipment as required;
- Consider whether additional resources are required to mitigate the event;
- In the case of significant pollution, inform stakeholders that may be impacted;
- Inform the relevant regulatory authorities (e.g. Donegal County Council; EPA; National Parks and Wildlife Service);
- Put monitoring in place to measure the duration and extent of the event, and the concentration of known pollutants;
- Keep a diary record of all actions;
- Take comprehensive photographic records of the event; and
- Liaise closely with relevant Client's personnel as identified in the PIRP contacts list.

4.8.5 Training and Records

Training in appropriate pollution response procedures will be provided to all site personnel. This will be undertaken at induction training and through regular toolbox talks to ensure that information in relation to the current construction phase of the Project is kept up to date.

The MWC representative will be responsible for implementing the training programme. The MWC representative will also carry out regular inspections of essential pollution prevention equipment to ensure it is adequately serviced, in calibration or certification and fit for purpose.

The MWC representative will maintain a detailed record of all pollution events and responses, costs incurred and environmental impacts. The record will include a comprehensive debriefing of participants to provide an analysis of causes of the pollution event, detail lessons learned and preventive or corrective actions taken to prevent event recurrence or similar events.

4.9 Archaeology and Cultural Heritage

The proposed mitigation measures for construction stage in relation to the identified Cultural Heritage impacts within the Study Area are detailed in Table 15.10 of the EIAR. In addition to this it is proposed to carry out licenced archaeological monitoring of all ground reduction/topsoil stripping areas within greenfield areas (including riverbanks) at the works and design footprint, during construction stage. The contractor must allow for these mitigation measures to be implemented and for full licenced archaeological monitoring to be undertaken within the Proposed Scheme during construction. This archaeological monitoring also extends to the temporary platform area that might be required in-river, adjacent to the metal find feature identified during the underwater survey. All mitigation measures are subject to statutory prior agreement by National Monuments Service/National Museum of Ireland.

Preservation by avoidance is the principal mitigatory measure applicable to the Cultural Heritage resource (see also DHLGH (NMS) Guidelines, 2023, 49). Where avoidance in whole or in part via design refinement has been exhausted, recourse to preservation in situ or preservation by record shall be the primary applicable mitigation measures, subject to statutory agreement with NMS and NMI, and licensable under Section 3(5) and Section 26 and of the National Monuments Act 1930 (as amended).

For instances where the cultural heritage receptor cannot be avoided but can be incorporated into the proposed development footprint, without additional ground reduction, drainage measures, or amenity impact such that preservation in situ can avoid or reduce the level of impact, this measure shall be adopted (subject to statutory agreement). In principle, given the continued sub-surface site preservation (although altered site context), this shall provide a lesser residual significance of effect on same.

For instances where the cultural heritage receptor cannot be incorporated into the proposed development footprint, preservation by record shall be adopted (subject to statutory agreement). This shall involve a full and detailed licenced archaeological excavation (archaeological sites, vernacular and industrial heritage structures) and (extant) built heritage survey records (written, drawn and photographic) undertaken based on professional standards of archaeological practice (Policy Guidelines on Archaeological Excavation – Department of Arts, Heritage, Gaeltacht, and the Islands, 1999).

For instances where the cultural heritage receptor is located outside the proposed development footprint but within any lands made available for temporary works areas during construction, designation of exclusion zones appropriate to the extent and sensitivity of the receptor will be applied.

Preservation by record, written, drawn and photographic built heritage record of a sample section through the embankment will be undertaken prior to removal of the Skeoge Embankment. The removal of the Skeoge Embankment will be marginally offset by provision of a pathway to facilitate the proposed Northwest Greenway, at new embankment area to the rear of the old Burnfoot Mart.

The proposed mitigation measures for operational stage in relation to the identified Cultural Heritage impacts within the Study Area are detailed in Table 15.11 of the EIAR, all of which are subject to statutory agreement by National Monuments Service/National Museum of Ireland.

4.10 Consents and Licenses

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- Site notices;
- Construction commencement notices; and
- Licence to connect to existing utilities and mains sewers, where required.

4.11 Material Handling, Storage and Delivery

The Contractor will ensure that the delivery of materials is coordinated to minimise impacts to adjacent properties. The Contractor will ensure that all materials are adequately stored and secured in their site compound. The Contractor will ensure the roads adjacent to the site are kept clean and free of debris.

It is proposed to source general construction materials from the local area to minimise transportation distances (subject to suitable material costs). Where possible 'Just in Time' delivery system will operate to minimise storage of materials on-site.

Aggregate materials such as sands and gravels will be stored in clearly marked areas in the compound area within the site. Liquid materials will be stored within temporary bunded areas, double skinned tanks or bunded containers (all bunds will conform to standard bunding specifications – BS EN 1992-3:2006) to prevent spillage. The site compound will be used for storage including topsoil, clay and reinforced steel, drainage pipes and sheet piles until needed for construction. From there, materials will be transported to the relevant section of defence utilising a range of plant via the constructed haul roads and/or public roads.

Construction materials will be brought to site by road. Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

The majority of construction waste materials generated will be soil from excavation works. Material will be removed from site regularly to ensure there is minimal need for stockpiling.

4.12 Communications with Local Stakeholder Management

The Developer will, as required, liaise with owners of local commercial properties in advance of works commencing onsite and coordinate works to have minimum impact on the operation of local properties. All signage used will meet the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual.