Barnesmore Gap Greenway

Appendix 4.1: Construction Environmental and Management Plan (CEMP)

Donegal County Council

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1. Introduction

This Construction Environmental Management Plan (CEMP) is prepared for the proposed Barnesmore Gap Greenway (hereafter referred to as "the proposed development") on behalf of Donegal County Council.

1.1 Purpose of the CEMP

This CEMP applies to all works associated with the proposed development including enabling works such as fencing, site clearance, etc.

As a contractor has not yet been appointed, this Construction Environmental Management Plan (CEMP) has not been formally adopted and further development and commitment to the CEMP will be undertaken following selection of Contractors and before commencement of site works.

It presents the approach and application of environmental management and mitigation for the construction of the proposed development. It aims to ensure that adverse effects from the construction phase of the proposed development, on the environment and the local communities, are avoided or minimised. It does not describe mitigation measures relating to the operation and decommissioning of the proposed development. These are provided in the EIAR.

The CEMP provides the environmental management framework for the appointed Contractors and sub-contractors as they incorporate the mitigating principles to ensure that the work is carried out to avoid, remedy or reduce adverse effects on the environment. The construction management staff as well as contractors and sub-contractors' staff must comply with the requirements and constraints set forth in the CEMP in developing the finalised CEMPs. The key environmental aspects associated with the construction of the Barnesmore Gap Greenway and the appropriate mitigation and monitoring controls, are identified in this CEMP and its supporting documentation.

The implementation of the requirements of the CEMP will ensure that the construction phase of the project is carried out in accordance with the commitments made by Donegal County Council for the proposed development, and as required under the planning application and any Conditions imposed by the competent authority, An Coimisiún Pleanála. Once commenced, the CEMP is considered a live document that will be updated according to changing circumstances on the project and to reflect current construction activities. The CEMP will be reviewed on an ongoing basis during the construction process and will include information on the review procedures.

1.2 Environmental Construction Guidelines

The TII/NRA Environmental and Construction Guidelines provide guidance with regard to environmental best practice methods to be employed in construction on National Road Schemes. The following construction guidelines will be adhered to by the contractor:

- *Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes,* PE-ENV-01115, 2005a.
- *Guidelines for the Treatment of Bats during the Construction of National Road Schemes*, CC-ENV-01102, 2005b.
- *Guidelines for the Treatment of Badgers prior to the Construction of a National Road Schemes*, CC-ENV-01103, 2005c.
- *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes*, CC-ENV-01101, 2005d.
- *Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes*, GE-ENV-01110, 2006a.

- *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes*, CC-ENV-001104, 2006b.
- *Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan*, GE-ENV-01109, 2007.
- *Good Practice Guidance for the Treatment of Noise during Planning of National Road Schemes*, PE-ENV-01111, 2014.
- *Guidelines for the Management of Waste from National Road Construction Projects*, GE-ENV-01101, Dec 2017.
- *The Management of Invasive Alien Plant Species on National Roads – Standard*, GE-ENV-01104, December 2020a.
- *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance*, GE-ENV-01105, December 2020b.
- *Guidelines for the Treatment of Noise and Vibration in National Road Schemes, PE-ENV-01110*, 2004 (Reissued Sept 2025).
- *Air Quality Assessment of Proposed National Roads – Standard*, PE-ENV-01107, December 2025.

This is a non-exhaustive list and relevant guidance current at the time of construction will be followed. It is proposed to employ these guidelines, as and where relevant, on this project.

1.3 CEMP Appendices

The CEMP contains the following supporting environmental documents:

Appendix A Erosion & Sediment Control Figures

Appendix B Schedule of Environmental Commitments

Appendix C An Coimisiún Pleanála approval including any conditions / modifications

Appendix D Environmental Operating Plan

Appendix E Resource Waste Management Plan

Appendix F Incident Response Plan

Appendix G Invasive Species Management Plan

Appendix H Construction Traffic Management Plan

2. Description of the Proposed Development

2.1 Project Description

The proposed development is an active travel facility located in south County Donegal, linking the settlements of Donegal Town and Ballybofey/Stranorlar. The proposed route of the greenway mainline is approximately 31km in length and will be a bi-directional shared walking, wheeling, and cycling route. There is a further 6.5km of spurs and loops which provide additional connectivity and integration to surrounding amenities and active travel routes, which gives a total length of 37.5km for the proposed facility. The greenway is proposed to follow along Barnesmore Gap, a scenic glacial valley that provides the only communication gap through the 'Bluestack Mountains' in southern County Donegal. This mountain pass provides the main transportation link between north and south Donegal.

A full detailed description of the proposed development is provided in Chapter 4 of Volume 2 of the EIAR.

2.2 Construction Programme Sequence

It is likely that the construction of the development will be progressed as a single construction contract with the construction phase potentially lasting up to 24 months depending on the approach taken by the contractor. A construction period of 24 months (104 weeks) has been assumed.

For the purposes of the EIAR the proposed development has been split into three sections, as shown in Table 2-1 below. This construction methodology anticipates that work could be undertaken on all three sections simultaneously. These sections have been split based on the predominant classification of the greenway corridor (i.e. abandoned railway or greenfield) and broadly have a similar number of trailhead and major structures. Each section has a main compound, and several temporary working areas as outlined in Volume 2: Chapter 4 Description of the Proposed Development.

Table 2-1 - Construction Sections

Section	Location	Summary	Total Length	Comments
Section 1	Ch.0 – 10+300 including Lough Eske Loop and Clar Link	Largely offline greenfield construction from Donegal Town to southwest of Gap	14.7km	2no trailheads and 5no major structures
Section 2	Ch.10+300-20+500	Abandoned Railway corridor (mountainside and bog) from southwest of Gap to Lough Mourne	11.4km	1no trailhead and 1no major structures
Section 3	Ch.20+500 – 30+100 including Goland Link	Largely abandoned Railway corridor (forestry and agricultural land) from Lough Mourne to Stranorlar	11.3km	1no trailhead and 2no major structures

2.2.1 Construction Sequence and Methodology

The main activities likely to take place during the construction phase are outlined below. Works will largely be undertaken in the following sequence; however it is expected that the detailed construction programme will involve works at multiple areas being undertaken concurrently.

1. Pre-construction works will include diversion works of services and utilities, along with vegetation clearance, archaeological testing and resolution, ground investigation and fencing. Some of these activities are dependent on the seasonal timing of the award of the main contract.

2. The establishment of the works compounds and the connection of services for their operation will be undertaken at the start of the works, along with the construction of access roads.
3. This will then be followed by site clearance and topsoil stripping of the site in stages. This will be phased to keep just ahead of the major earthworks' movements. Initial works on permanent and temporary boundary fences will also be undertaken as a preliminary operation, with further boundary works required on completion of the main construction works. Accommodation works where required for access, as well as temporary access routes and haul routes through the site will be key early activities.
4. The contractor will construct elements of the permanent drainage system as early as practicable to facilitate earthworks haul routes, control drainage from the works and to avoid flows onto adjacent land and/or untreated discharges to watercourses.
5. Works to the new structures will be significant elements of the construction phase and may be constrained by seasonality in some locations.
6. The bulk earthworks will be undertaken along with capping and geogrid where required. Where earthworks will be minimal in nature, i.e. along the railway corridor, operations will be able to move quicker from clearance to drainage and pavement activities. Pavement activities, including subbase, binder and surface course will follow in all areas once the earthworks and sub-formation is complete.
7. Trailheads will be constructed after the main greenway alignment as they are proposed to be used as site compounds.
8. The last activities to be completed will be signs and road markings, followed by the removal and reinstatement of temporary site compounds to pre-work conditions.

The detailed sequencing of the works will be outlined in the detailed programme developed prior to construction, and will take into account the following items:

- Traffic management, with particular consideration given to closures of the national road
- Seasonality with respect to site clearance and works near rivers
- Minimising disruption to residents, commercial businesses and tourist attractions
- Reducing as far as possible the cut/fill imbalance and mass haul requirements.
- Health, Safety and Welfare requirements
- All mitigation measures identified in the EIAR and in any conditions of statutory Approval.

2.2.2 Working Hours

Construction working hours will be 08.00 – 18.00 Monday to Friday with reduced hours on Saturday (08.00 – 14.00) and that the site will be closed on Sundays and during public holidays. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of Donegal County Council. Works shall not be permitted on Sundays or Bank Holidays.

24-hour working will be required for the construction of the three underpasses under the N15/N56 national roads. Each underpass location will require 1-2 weekends where construction activities take place outside of normal working hours (24 hours a day) while the national road is closed.

2.2.3 Sourcing of Materials

Materials for the construction of the project are readily available. Topsoil used for verges will be stripped from site. Paving materials including unbound granular material Type A Cl 804, binder material, surface course and 6F2 capping material will be sourced from quarries and bitumen plants in the locality. Structural concrete will also be sourced from nearby concrete plants.

Other materials to be brought to site include fencing materials, safety barriers, drainage pipes, drainage stone, road signs, road marking materials and public lighting columns.

2.2.4 Temporary Construction Compounds & Working Areas

The temporary construction compounds will be set up and maintained by the successful Contractor. They are shown in Temporary Construction Areas and Compounds Drawings 60701883-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-HG-0901, in Volume 3 of the EIAR. The compounds and working areas vary in size and will likely include welfare facilities, stores, offices, material storage areas, plant storage and parking for site and staff vehicles. They may remain in place for the duration of the construction programme or may be scaled up or down during particular activities on site.

Construction Compounds and Working Areas

Three main construction compounds will be used for the duration of construction. These compounds are located at proposed trailheads.

- Compound 1: Donegal Town
- Compound 2: Biddy O' Barnes
- Compound 3: Stranorlar

Working Areas

A total of 22 working areas will complement the main construction compounds, situated along the proposed development every 500m-2000m, depending on the spacing of compounds in a given area.

2.2.5 Construction Traffic Management

The anticipated number of HGV journeys have been estimated against pavement, earthworks and drainage activities, and the peak volume of HGV movements identified. As long sections of the route are offline, traffic management requirements will be minimised.

Two-way lights will be provided where construction vehicles are to cross public roads along the scheme, and appropriate signage will be provided at access/egress points to the site. Temporary road closures of sections of the N56 and N15 are expected to be required to accommodate the construction of 3no underpasses.

Temporary road closures and diversions will also be required for the installation of the proposed overbridge structure at Sessiaghoneill, the realignment of the local road L1945 at Lough Eske including the bridge crossing and the realignment of Railway Road, Donegal Town. Temporary traffic management will also be required during the construction of on road active travel sections and crossing points at Tirchonail Street, Donegal Town, Navenny Street, Ballybofey and Railway Road, Stranorlar. The construction programme and sequence will be developed to minimise the durations and impacts to road users during any part or full closures.

The successful Contractor shall prepare a comprehensive Construction Traffic Management Plan (CTMP) in consultation with Donegal County Council, TII, and An Garda Síochána before the commencement of the construction phase. The CTMP will include all the mitigation measures pertaining to Traffic and Transportation as set out in Appendix B Schedule of Environmental Commitments to minimise the effect of construction traffic on the surrounding network, local community and the environment. The CTMP will also be developed to ensure emergency vehicles will not be negatively impacted by the works. The CTMP will be a separate document to the CEMP (Refer to Appendix H).

3. Construction Environmental Management Plan (CEMP) Requirements

This CEMP will be used to prepare the fully developed CEMP by the Contractor to meet the requirements of ISO 14001, and all site works will be undertaken in compliance with the CEMP.

The CEMP will detail all the environmental aspects and impacts associated with this contract such as waste management, pollution prevention and protection of flora and fauna with particular emphasis on the Special Area's of Conservation (SACs), Special Protection Area's (SPAs), proposed Natural Heritage Area's (pNHAs) and Natural Heritage Areas (NHAs) and water quality in the watercourses.

3.1 Environmental Policy

The Contractor will develop an Environmental Policy with consideration for impacts on the natural and built environment. All project personnel will be accountable for the environmental performance of the Project and will be made aware of the Environmental Policy at induction. The Environmental Policy will consider and make commitments with regard to the protection of Natura 2000 sites, and any pNHA and/or Natural Heritage Area (NHA) sites, emissions to the atmosphere, maintenance of water quality, resource usage, energy consumption and waste management.

3.2 Environmental Aspect Register

Once appointed, the Contractor will prepare a register of all sensitive environmental features which have the potential to be affected by the construction works, together with details of commitments and agreements made during the preparation of the EIAR and Natura Impact Statement and the statutory development consent process including any conditions that may be imposed by An Coimisiún Pleanála and the contract documentation, with regards to mitigation of potential environmental impacts. The Environmental Aspects Register provides the relevant information for the preparation of construction method statements and will be regularly updated during the works.

A non-exhaustive list of sensitive environmental features/receptors is listed below:

- Identification of all waterways and drainage outlets for the protection against ingress of suspended solids or any pollutant.
- Air emissions.
- Noise emissions.
- Vibration emissions.
- Light emissions.
- Waste generation.
- Treatment of contaminated materials.
- Treatment of invasive species.
- Use of hazardous materials.
- Energy usage.
- Water usage.
- Discharge of wastewater.
- Traffic generation.
- Biodiversity (terrestrial and aquatic ecology)

- Landscape and Visual impacts.
- Soils, Geology and Hydrogeology.
- Hydrology.
- Cultural Heritage.

3.3 Project Organisation and Responsibilities

The Contractor's CEMP will define the roles and responsibilities of the project team. The Contractor is responsible to ensure that all members of the Project Team, including sub-contractors, comply with the procedures set out in the CEMP. The Contractor will ensure that all persons working on site are provided with sufficient training, supervision and instruction to fulfil this requirement.

Key staff will be notified of their appointment and confirm that their responsibilities are clearly understood. The principal environmental responsibilities for key staff can be identified in the following sections.

3.3.1 Employer

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

3.3.2 Employer's Representative

The Employer's Representative (ER) appointed by Donegal County Council will be responsible for monitoring compliance with the CEMP. The ER may be required to appoint a temporary or permanent specialist(s) with appropriate experience as required to implement on site procedures and monitoring construction on behalf of Donegal County Council i.e. competent experts in biodiversity, contamination and/or water.

3.3.3 Project Manager

The Project Manager's main duties and responsibilities in relation to the CEMP include liaising with the Project Team in assigning duties and responsibilities in relation to the CEMP to individual members of the main contractor's project staff.

It is the responsibility of the Project Manager to approve key personnel required for employment on the project and will liaise with the site Environmental Manager.

The Project Manager will lead the works on site and will be responsible for the management and control of the activities and will have overall responsibility for the implementation of the CEMP. The Project Manager will be assisted by the site Environmental Manager who will act as his/her deputy.

3.3.4 Site Manager

The Site Manager's environmental management responsibilities include, but are not limited to:

- Liaising with the site Environmental Manager and the Project Team in assigning duties and responsibilities in relation to the CEMP, to individual members of the main contractor's project staff;
- Liaising with Site Environmental Manager in preparing, reviewing and updating all site-specific method statements for activities where there is a risk of pollution or adverse effects on the environment;
- Liaising with the site Environmental Manager in agreeing site specific Method Statements with Third Parties;

- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from the contractor's Project Team, including the Project Manager, to the site Environmental Manager in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required;
- Ensuring that the risk assessments for control of noise and environmental risk are prepared and effectively monitored, reviewed and communicated on site;
- Close liaison with the site Environmental Manager to ensure adequate resources are made available for implementation of the CEMP; and
- Ensuring that the site Environmental Manager reviews all method statements, performs regular and frequent environmental site inspections and that relevant environmental protocols are incorporated and appended.

3.3.5 Site Environmental Manager

To ensure the successful development, implementation and maintenance of the EOP, the Contractor will appoint an independent Site Environmental Manager (SEM). He/she must possess training, experience and knowledge appropriate to the role, including a National Framework of Qualifications (NFQ) Level 8 qualification (or equivalent) or other acceptable qualification in environmental science, environmental management, hydrology or engineering. The principal functions of the SEM will be to ensure that the mitigation prescribed in the EIAR, the EOP and the CEMP, is fully and properly implemented and to monitor the construction stage from an environmental perspective. The SEM will also provide independently verifiable audit reports. Separate from the on-going and detailed monitoring carried out by the Contractor as part of the EOP, the SEM will carry out the inspection and monitoring described below on behalf of DCC. The results will be stored in the SEM's monitoring file and will be available for inspection or audit by DCC, the NPWS, IFI and the Lough's Agency. The responsibilities of the Site Environmental Manager include, but are not limited to:

- Ensuring that the CEMP is finalised, implemented and maintained;
- Liaising with Site Manager in agreeing site specific Method Statements with Third Parties, preparing, reviewing and updating all site-specific method statements for activities where there is a risk of pollution or adverse effects on the environment;
- Being familiar with the information in the pre-construction surveys, construction requirements, An Coimisiún Pleanála and Planning Service decisions and all relevant Method Statements;
- Being familiar with the contents, environmental commitments and requirements contained within the reference documentation listed in the CEMP;
- Being familiar with the baseline data collated during the compilation of the EIAR and the NIS;
- Assisting Management in liaising with the Engineers and Donegal County Council and the provision of information on environmental management during the construction of the project;
- Liaising with the Site Manager and the Project Team in assigning duties and responsibilities in relation to the EOP, to individual members of the main Contractor's project staff;
- Overseeing, ensuring coordination and playing a lead role in third party consultations required statutorily, contractually and in order to fulfil best practice requirements;
- Ensuring that all relevant works are undertaken in accordance with the relevant legislation in the Republic of Ireland;
- Liaising with the designated licence holders and specific agent defined in the licence with respect to licences granted pursuant to the Wildlife Acts 1976 (as amended) and the European Communities (Birds and Natural Habitats) Regulations 2011;

- Bring any legal constraints that may occur during certain tasks to the attention of management;
- Hold copies of all permits and licenses provided by waste contractors;
- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc have appropriate authorisation;
- Gathering and holding documentation with respect to waste disposal;
- Keeping up to date with changes in environmental practices and legislation and advising staff of such changes and incorporating them into the CEMP;
- Liaising with contactors and consultants prior to works;
- Procuring the services of specialist environmental contactors when required;
- Ensuring that all specialist environmental contactors are legally accredited and proven to be competent;
- Coordinating all the activities of the specialist environmental contractors;
- Ensuring that environmental induction training is carried out on all personnel on site and ensuring that toolbox talks include aspects of environmental awareness and training;
- Respond to all environmental incidents in accordance with legislation, the CEMP and company policy/procedures;
- Responsible for notifying the relevant statutory authority when environmental incidents occur and producing the relevant reports as required;
- Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licenses, certificates and planning permissions;
- Carrying out regular documented inspections of the site to ensure that work is being carried out in accordance with the Environmental Control Measures and relevant site-specific Method Statements;
- Preparing and being ready to implement at all times the Incident Response Plan;
- Responsible for reviewing all environmental monitoring data and ensuring that they all comply with stated guidelines and requirements;
- Weekly inspections of the principal control measures described in the CEMP and reporting of findings to the Contractor.
- Daily inspections of surface water treatment measures.
- Daily inspections of all outfalls to watercourses.
- Daily visual inspections of watercourse to which there are discharges from the works and those in the vicinity of construction works, including checks for turbidity and signs of pollution.
- Weekly inspections of wheel-wash facilities.
- Daily monitoring of any stockpiles.
- Auditing at least six times per quarter of the Contractor’s EOP monitoring results.

3.3.6 Design Manager

The main duties and responsibilities of the Design Manager include:

- Be familiar with the CEMP and relevant documentation referred to within;
- Be familiar with the contents, commitments and requirements contained within the reference documents; and
- Participate in Third Party Consultations and liaising with third Parties through the site Environmental Manager.

3.3.7 Site Agents

The Site Agents are responsible for the following:

- Ensuring Forepersons under his/her control adhere to the relevant Environmental Control measures and relevant site-specific Method Statements, etc.
- Ensuring that the procedures agreed during third party consultations are followed.
- Reporting immediately to the site Environmental Manager any incidents where there has been a breach of agreed environmental management procedures, where there has been a spillage of a potentially environmentally harmful substance, where there has been an unauthorised discharge to ground, water or air, damage to habitat, etc.
- Attending environmental review meetings and preparing any relevant documentation as required by Management.

3.3.8 Forepersons

The Forepersons on site are responsible for the following:

- Ensuring personnel under his/her control adhere to the relevant environmental control measures and relevant site-specific Method Statements;
- Reporting immediately to the site agents and site Environmental Manager any incidents where there has been a breach of agreed procedures e.g. spillages and discharges.

3.3.9 Project Supervisor Construction Stage

The role of the Project Supervisor Construction Stage (PSCS) is to manage and co-ordinate health and safety matters during the construction stage. The PSCS will be appointed before the construction work begins and will remain in that position until all construction work on the project is completed. It is the responsibility of the PSCS to ensure that the project:

- is designed and is capable of being constructed to be safe and without risk to health.
- is constructed to be safe and without risk to health.
- can be maintained safely and without risk to health during subsequent use.
- complies in all respects, as appropriate, with the relevant statutory provisions.

The PSCS will maintain contact with the Project Supervisor Design Process (PSDP) throughout the construction phase to communicate any health and safety related issues. The PSDP will prepare a written safety file appropriate to the characteristics of the project, containing relevant health and safety information, to be taken into account during any subsequent construction work following completion of the project.

3.3.10 Ecological Clerk of Works (ECoW)

In order to ensure the successful development and implementation of the CEMP and the EOP, the Contractor will appoint an independent Ecological Clerk of Works (ECoW). The ECoW must possess training, experience and knowledge appropriate to the role, including:

- An NFQ Level 8 qualification or equivalent or other acceptable qualification in an ecological discipline; and,
- Demonstrable appropriate practical experience as an ECoW in the protection of European sites.

The principal functions of the ECoW are:

- To ensure that the mitigation prescribed in this NIS, the EIAR, the EOP and the CEMP, is fully and properly implemented and to monitor the construction stage from an ecological perspective.
- The ECoW will also provide independently verifiable audit reports.

- Any mitigation measures required for the protection of species and habitats will be inspected and approved by the ECoW before commencement of works in each area. The ECoW will have power to stop the works if further mitigation measures are required.

During the preparation of the Contractor's CEMP, the Site Environmental Manager may, as appropriate, assign other duties and responsibilities to the ECoW.

In exercising his/her functions, the ECoW will be required to keep a monitoring file, and this will be made available for inspection or audit by Donegal County Council, the NPWS or IFI at any time.

3.3.11 Project Archaeologist

The Project Archaeologist on site is responsible for the following:

- Relevant licences to the Department of Housing, Local Government and Heritage required for the project in advance of any construction work taking place and throughout the project as required.
- To supervise works in vicinity of known archaeological sites.
- To supervise any pre-construction archaeological survey works.

Section 26 of the National Monuments Act 1930 (as amended) requires that excavations for archaeological purposes must be carried out by suitably qualified and experienced archaeologists acting under an excavation licence.

3.4 Training and Induction

3.4.1 Site Induction

All employees and sub-contractors involved on site will be given a comprehensive induction prior to commencement of the works. The environmental training and awareness procedure will ensure that staff are familiar with the principles of the CEMP, the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

This environmental training can be run concurrently with safety awareness training. Training will include:

- Overview of the Environmental Policy and Construction Environmental Management Plan, goals and objectives;
- Awareness in relation to risk, consequence and methods of avoiding environmental risks as identified within the Register of Aspects and with the planning conditions;
- Awareness of roles and individual environmental responsibilities and environmental constrains to specific jobs;
- Location of and sensitivity of Special Area of Conservations, Special Protection Areas, protected monuments, structures etc.
- Location of habitats and species to be protected during construction, how activities may affect them and methods necessary to avoid impacts.
- A record will be kept of a signed register on the project files of all attendees of the environmental induction.
- Toolbox talks based on specific activities being carried out will be given to personnel by the nominated project representative. These will be based on specific activities being carried out and will include environmental issues particular to the project, including the impact on bird populations and water quality namely:
- Oil/Diesel spill prevention and safe refuelling practice;

- Storage of materials including oil/diesels and cement;
- Emergency response processes used to deal with spills;
- Minimising disturbance to wildlife;
- Emergency response to include water pollution hotline to the EPA for regulator response. Identification of registered / accredited spill cleanup company for oil etc.; and
- Consideration of importance of containment of vehicle washing, containments of concrete / cement / grout washout etc, bank protection using hessian to prevent excessive scour and mobilisation of suspended solids, maintenance of vegetation corridors etc.

3.4.2 Specific Training and Awareness

A project specific training plan that identifies the competency requirements for all personnel allocated with environmental responsibilities will be produced by the Contractor. Training will be provided by the Contractor to ensure that all persons working on site have a practical understanding of environmental issues and management requirements prior to commencing activities. A register of completed training is to be kept by the SEM. The Site Manager will ensure that environmental emergency plans are drawn up, and the SEM will conduct the necessary training/inductions.

3.5 Project Communication and Co-ordination

Communication with the local community, Donegal County Council and other relevant stakeholders shall be undertaken at an appropriate level and frequency throughout construction.

Where communications are related to environmental issues the Site Environmental Manager would be informed and engaged with as appropriate. Details of the available communication channels/points of contact for members of the public to contact the project team during construction will be established in advance of the commencement of construction and displayed around working areas.

The Contractor will ensure that local residents, businesses, occupants, general users of the area and stakeholders are informed in advance of construction activities that may affect them. Relevant obligations and procedures in relation to advance notice of works will be identified in the detailed CEMP(s)

Environmental issues and performance aspects will be communicated to the workforce on a regular basis. Weekly project meetings, which follow a set agenda incorporating the environment, will be held alongside overall management meetings.

All staff and sub-contractors involved in all phases of the project will be encouraged to report environmental issues.

3.6 Operational Control

Site works will be checked against the CEMP requirements. Any mitigation measures that have been agreed with the Statutory Authorities, or are part of planning conditions, will be put into place prior to the undertaking of the works for which they are required, and all relevant staff will be briefed accordingly.

Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager and where necessary, the relevant Environmental Specialist. The contractor will be required to engage with NPWS, IFI and the Lough's Agency on method statements for works in, near or liable to impact on a waterway.

A Quality Management System (QMS) will also be put into operation for the project. Document control will be in accordance with this QMS and copies of all audits, consents, licences, etc will be finalised by the Site Environmental Manager and their team and kept on site for review at any time.

3.7 Checking and Corrective Action

Daily inspections of the site and the works will be undertaken by the Site Environmental Manager to minimise the risk of environmental damage and to ensure compliance with the CEMP. The Site Environmental Manager will undertake periodic inspections and complete an assessment of the project's environmental performance with regard to the relevant standards/legislation and the contents of the CEMP. Following these inspections, the Site Environmental Manager will produce a report detailing the findings which will be provided to the Client Project Manager and reviewed at the monthly project meeting.

3.8 Environmental Control Measures

The Contractor will be responsible for ensuring that licensing requirements will be in place and specific procedures to manage the key environmental aspects of the project will be developed and in place prior to work commencing.

3.9 Complaints Procedure

The Contractor shall establish a process for handling all enquires including complaints. All enquires will be recorded and a log would be maintained to include details of the response and actions taken. This will be available upon request for inspection to Donegal County Council. All enquiries, whether a query or a complaint, will be dealt with in a timely manner. The Site Environmental Manager will be immediately informed of any environmental related issues that have been raised. Where appropriate, the Site Environmental Manager would be responsible for informing Donegal County Council, relevant stakeholders and statutory bodies.

3.10 Details of Construction Environmental Management Plan

The Contractor will be required to include details under the following headings in the Construction Environmental Management Plan (CEMP) with full adherence to the Appendix B Schedule of Environmental Commitments:

- Details of working hours and days as per the prescribed working hours set out in Section 2.2.2.
- Details of emergency plan - in the event of fire, flooding, chemical spillage, cement spillage, collapse of structures or failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for: Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services.
- Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages).
- Details and locations of construction plant storage, temporary offices.
- Traffic management plan (to be developed in conjunction with the Local Authority – Roads Section) including details of routing of network traffic; temporary road closures; temporary signal strategy; routing of construction traffic; programme of vehicular

arrivals; on-site parking for vehicles and workers; road cleaning; other traffic management requirements.

- Truck wheel wash details (including measures to reduce and treat runoff).
- Dust management to prevent nuisance (demolition & construction).
- Site run-off management and water quality protection measures
- Noise and vibration management to prevent nuisance (demolition & construction).
- Landscape management.
- Management of contaminated land and assessment of risk for same by suitably qualified, trained and licenced personnel.
- Stockpiles.

The Contractor will be required to include project procedures & method statements for:

- Site clearance, site investigations, excavations;
- Diversion of services;
- Excavation and/or blasting (through peat, soils & bedrock);
- Piling;
- Temporary hoarding & lighting;
- Storage and Treatment of peat and soft soils;
- Disposal of surplus geological material (peat, soils, rock etc.);
- Earthworks material improvement; and
- Monitoring and management measures for the protection of watercourses from contamination and silting during construction.
- Site compounds.

The production of the CEMP will also detail areas of concern with regard to Health and Safety and any environmental issues that require attention during the construction phase. Adoption of good management practices on site during the construction and operation phases will also contribute to reducing environmental impacts.

3.10.1 Construction Traffic

Assuming a 24-month construction programme, an indicative sequence of works has been developed, breaking down the main construction activities in each section and assigning gangs to each activity. The anticipated number of HGV journeys have therefore been estimated against pavement, earthworks and drainage activities, and the peak volume of HGV movements identified.

Furthermore, numbers of car/van movements for site staff have also been estimated based on the amount of construction activity on site at any given time. These numbers are outlined in the Table 3-1 below.

Table 3-1 - Construction related HGV and LGV Journeys

Construction Month	Number of additional daily LGV journeys*	Number of additional daily HGV journeys
1	18	0
2	55	0
3	164	40
4	182	80
5	164	80

Construction Month	Number of additional daily LGV journeys*	Number of additional daily HGV journeys
6	128	80
7	146	89
8	109	69
9	128	78
10	91	38
11	73	18
12	73	18
13	109	43
14	109	43
15	109	43
16	128	34
17	128	34
18	109	34
19	55	25
20	73	25
21	73	25
22	55	25
23	36	0
24	18	0

** Based on TII Publication RE-ENV-01109 N22 Carbon Benchmarking and Analysis. 'The on-site observations also revealed, that 1 in 12 construction workers share a lift (8.33%), 50% travel by car (25% by small car, and 25% by large car), and 45% travel by van.'*

3.10.2 Description of Typical Works

The type of construction along the proposed development can broadly be classified in three ways:

- Abandoned Railway Corridor
- Offline Greenfield
- Offline Woodland
- Structures

The general construction sequence of each classification is shown below:

Abandoned railway corridor

Initially, trees and areas of vegetation that have grown within the railway corridor are to be cleared. Trees and areas of vegetation that are running alongside the railway corridor may need to be cut back but will be retained in situ. Fencing will then be installed, where required.

Existing drainage ditches will be used where possible, with new attenuation and outfalls to watercourse provided. Drainage channels will be cleaned and crossings repaired.

In general, the existing rail capping will be taken as the formation level. Where required, this will be made good by removing and replacing the top layer with subbase before the pavement

is laid. Once pavement is complete, verges will be completed using topsoil stripped from the site, and all new road markings and signage will be installed.

Any remaining permanent fencing that was not installed prior to the general construction, will be installed and any temporary construction facilities removed.

Offline greenfield alignment

These sections will require greater quantities of cut and fill earthworks operations compared to the sections along the abandoned railway corridor. Initially trees and areas of vegetation along the proposed route of greenway are to be cleared. Habitat clearance is to be minimised where possible. Fencing will then be installed, where required.

The existing topsoil will be excavated and associated overburden will be stored. Any required cut/fill operations will then be undertaken, with existing ground level will be excavated to sub-formation level. New drainage ditches are to be constructed, along with attenuation ponds and new pipe crossings. Any future use ducting, where required, will then be laid.

Geotextile, geogrid and a 300mm layer of capping are to be placed to make the formation level, followed by the pavement construction. Once pavement is complete, verges will be completed using topsoil stripped from the site, planting will be undertaken and all new road markings and signage will be installed.

Any remaining permanent fencing that was not installed prior to the general construction, will be installed and any temporary construction facilities removed.

Offline woodland

There are some localised sections which traverse woodland. These sections need particular care and attention to minimise the environmental impact of the construction of the proposed development, particularly with respect to site clearance and invasive species management. The two areas where the greenway traverses offline woodland are outlined below:

- Lougheask Demesne (Ch.350-550 Eske Loop), approximately 100m north and 610m southwest of the Lough Eske and Ardnamona Wood SAC. This area is outside the Lough Eske and Ardnamona Wood SAC and there is no potential to affect Qualifying Interests of this European site at this location. In advance of construction, the route of the alignment will be micro-sited in consultation with the Arborist and ECoW in order to minimise the loss of mature trees, and to protect the trees along the greenway that are to be retained. Furthermore, invasive species (including Rhododendron) in the corridor will be removed, providing an opportunity to improve the biodiversity of the area.
- Lough Eske (Ch.1350-1650 Eske Loop), within the Lough Eske and Ardnamona Wood SAC. Within the SAC ecological and topographical surveys have been undertaken to determine the presence of mature, native trees. The greenway alignment has been designed to avoid these trees. The ecological surveys indicated that the prevailing tree species in the area is Rhododendron, an invasive species. These plants will be cleared from the area providing an opportunity to improve the biodiversity in the area and the construction of greenway route will predominantly utilise these areas of clearance.

Existing and new structures

For new structures, all temporary cut off walls/sheet piles will be constructed initially along with measures for sedimentation control such as silt fencing and cut off ditches. Piling platforms (if required) and any required ground improvements within the footprint of the temporary cut off wall will then be installed.

The bridge support zone will then be excavated to the required formation level, followed by the casting in of in-situ abutment foundations, abutment wall and wingwalls. Approach embankments will then be constructed and backfilled to abutments as required for stability during installation of beams or trusses. All beams/girders and decks will then be erected before completing the required backfill to abutments.

Verges will then be constructed with required drainage, along with the erection of the parapet system before surfacing is completed.

A high-level construction methodology is provided below, broken down by work construction activity. For each activity an estimation of the construction plant has been provided. Further detail on construction erosion and sediment control measures follows in Section 4 of this CEMP.

3.10.2.1 Clearing and Grubbing

Trees, areas of vegetation and debris will be cleared from the proposed greenway corridor. Prior to works commencing, access should be established from the relevant compound or direct access from local road (with appropriate temporary traffic management to be in place). Site clearance will include the removal of existing vegetation on the footprint of the proposed development, including any roots of existing vegetation. Any low branches overhanging and extending over the proposed development are to be cut back. All vegetation not on the line of the proposed development is to be retained. Any material removed as part of the site clearance is to be mulched and reused in landscaping works where possible or recycled off-site.

Machinery required will include excavators, chainsaws, mulchers, skid steer loaders and dump trucks.

3.10.2.2 Fencing and Protection

Fencing will be installed early in the construction phase to delineate the works area, secure the site from the public and provide a livestock proof boundary. Temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with 'BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations'. The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the Environmental Clerk of Works (ECoW) in consultation with the Arboriculturist. Existing land boundaries will be retained. Where minor vegetation removal within hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction.

In some areas temporary fencing will be required where the permanent fencing cannot yet be installed. Temporary fencing to be constructed of timber post with 900mm sheep wire. Temporary fencing will be taken down and reused on other areas of the site, where possible. Temporary construction crossings and landowner crossings, as well as access controls, will be installed at direct accesses from local roads.

Permanent fencing will be constructed from timber post and wire mesh. Posts are to be driven where ground conditions allow, otherwise concrete foundations to be provided.

3.10.2.3 Earthworks

The earthworks for the proposed development of the greenway will involve the removal of topsoil and overburden from footprint of works to expose the subgrade, prior to cut and fill operations, to establish the formation level and allow for the placement of capping, geogrid and geotextile, where required. Most earthworks are confined to offline, greenfield areas.

Initially, topsoil will be excavated by excavators and transferred for storage by dump trucks. Topsoil is to be stored on site for reuse; stored on stockpiles along the route or in compound or working areas. Areas of cut will be excavated, with acceptable fill being reused on site for embankment structural fill and unacceptable fill used for verges and earthworks side slopes. Any areas containing invasive species will be removed in line per the Invasive Species Management Plan (Refer to Appendix G Invasive Species Management Plan).

Fill material is to be placed for embankment construction where required. Fill material to be placed will be compacted in layers. Fill material will be sourced from adjacent excavations on site to minimise transportation. For offline greenfield areas, geogrid and geotextile will be placed on subgrade and 6F2 capping material is to be imported, placed and compacted to construct to formation level.

Machinery will include excavators and dozers (for excavation and grading), dump trucks (for transporting cut/fill material), and rollers (for compacting fill).

3.10.2.4 Drainage, Culvert and Swale Installation

Scope:

Installation of drainage ditches, pipes and culverts for water drainage, including excavation and placement of pipes. Additionally, swales will be installed to manage surface water runoff along the route, promoting sustainable drainage and preventing erosion.

Machinery

- Excavators;
- Backhoe Loaders;
- Crawler Cranes;
- Wheel Loaders;
- Dump Trucks.

Activity

The following description contains input from the CIRIA C753 SuDS manual and the CIRIA C698 SuDS Construction manual on construction stage methodology.

Key activities during construction include site access, storage of materials, site drainage, and protection from erosion, pollution, sedimentation and over-compaction. Key protection areas such as buffer zones, filter strips, and trees will be identified at an early stage prior to any construction to avoid damage to the natural environment. Sediment traps and barriers will be installed before the start of earthworks construction to avoid sediment discharging to nearby watercourses. Where required and specified, stream bank stabilisation may also be completed early in the process and when weather is appropriate.

General: Construction runoff can come with high sediment loads and will be properly managed to mitigate impacts due to sediment like build-up in storage systems, pollution of receiving waters, and clogging of infiltration systems. Sediment traps and silt fencing will be installed before any major site earthworks /groundworks take place. The swales and the ditches can serve a dual purpose of managing sediment during the construction prior to their use as swales during operation. Runoff control used in combination with sediment traps to divert water around earthworks areas and remove silt will be used. Mitigation measures will be put in place to minimise risks of pollution due to oils and hydrocarbons from construction machinery. These will include measures such as maintenance of machinery, drip trays, designated areas for refuelling, and storage facilities.

Construction of swales, PED ditches, and OTE ditches: Swales, Pre-earthworks drainage (PED) ditches, and over the edge (OTE) ditches are shallow depressions that receive, convey, and attenuate runoff prior to discharge to the watercourses. Material will be excavated to form the depression according to the design. The excavation works will take place from the side of the swale and ditch features to avoid unnecessary vehicular traffic, compaction, and sediment impact to the feature. The CIRIA SuDS manual recommends that swales should receive runoff once vegetation has been established and at a stage where construction sediment loads will not cause rapid siltation in the features. The formation of ditch and swale depressions will occur during the earthworks phase, but final construction will take place at the end of the programme. Any silt or sediment deposited during construction will be removed and areas that have been subject to over-compaction rehabilitated. The construction of swales and ditches at an early stage will help with the management of runoff and assist in settling sediments resulting from construction. The establishment of vegetation and sediment removal will take place after site works are complete and before the start of the maintenance period. Inspections of drainage features will be completed as necessary to ensure proper construction.

Construction of pipes: Filter and carrier drains will be constructed by excavating a trench according to the design requirements. The pipe will be laid with appropriate bedding and

backfill materials. Any required testing of the pipes will be done to ensure the pipes have been correctly joined and installed.

Construction of culverts: For the construction of any pipe or box culverts, the culvert will be constructed offline to allow the existing channel to remain in place as long as possible. The pipe / box culvert will be installed first, followed by headwalls or wingwalls, and required backfilling. Any necessary rip/rap or scour protection measures will be installed next followed by the installation of the natural bed. Excavated material from the natural channel can be used at the upstream and downstream tie-in of the culverts and within box culverts to make up the embedment. Where fish are present, consideration will be required for resting pools upstream and downstream of the culvert. The watercourse will then be diverted through the new culvert and allow for greenway construction activities to proceed. Appropriate machinery for the size and type of culvert will be utilised.

Construction of watercourse diversions: Apart from the localised diversions for the construction of culverts outlined above, no further diversions are required.

3.10.2.5 Pavement

The pavement construction includes subbase, binder and surface layers. Initially, a subbase of unbound granular material Type A Cl 804 is to be paver laid and compacted to create the required crossfall. A 50mm layer of binder material will then be paver laid and compacted with lightweight (2t) twin drum rollers. 6t dump trucks may be required to transport the blacktop material to the paver. A 20mm layer of surface course will then be laid and compacted as above.

Machinery required will include excavators, dump trucks, pavers, and rollers.

3.10.2.6 Trailhead Construction

Car parks within trailheads will be constructed of permeable cellular paving and include geogrid, subbase, geotextile, plastic/concrete cellular paving and topsoil layers, along with kerbing, drainage, signage and road markings.

Initially, the site will be cleared and levelled as these will be utilised as compounds or working area during the construction of the greenway. This will be following by the placement and compaction of the subbase of unbound granular material Type A Cl 804. Drainage requirements within the car parks, including drainage carrier pipes, gully pots, outfalls and attenuation, will then be installed. Kerbing will be laid, followed by the laying of geotextile, sand and concrete/plastic cellular paving layers. Finally, soft landscaping areas will be made up of laying of soil and grass seed, followed by the installation of signage and road markings.

Machinery required will include excavators, dump trucks, and rollers

3.10.2.7 Bridge Construction

The construction of the river bridges and overbridge consist of three main phases:

- Excavation for Substructure Foundations
- Construction of Substructure Base, Abutments and Piers
- Installation of Bridge Deck

Excavation for Substructure Foundations

In advance of any excavations for foundations near watercourses, temporary cut off walls/sheet piles will be constructed along with measures for sedimentation control including silt fencing and cut off ditches with sedimentation traps.

Excavation for the substructure foundations will begin with excavations to formation level for the associated abutments and intermediate piers. The excavations will then be stabilised using temporary works (shoring, trench boxes, etc.). Once any temporary works are in place dewatering equipment, if required, is to be installed to ensure formation level remains dry.

Machinery required will include large excavators (for excavating), dump trucks (to remove spoil), and dewatering pumps (to ensure area remains dry).

Construction of Substructure Base, Abutments and Piers

Once the excavations are complete and safe, construction of the substructure will commence. Initially, shuttering will be erected for the reinforced concrete abutments followed by the installation of reinforcement cages. Concrete will then be poured and allowed to cure the appropriate amount of time. Once fully cured the formwork will be struck and removed. Waterproofing will then be applied to any buried concrete faces to prevent exposure to surrounding ground conditions. Back of wall drainage will be installed at the abutments followed by backfilling and compaction.

Machinery required will include articulated trucks, concrete mixer; dump trucks (for transporting backfill material), rollers and compactors (for proper compaction), drainage installation equipment, and a mobile crane (for shuttering and reinforcement).

Installation of Bridge Deck

After the completion of the substructure base, abutments and piers, the bridge deck can be installed. Steel box girders and transverse beams (as single lift) will be transported to site and erected. Once the steel girders and transverse beams are in place precast concrete deck slabs will be installed and continuity with substructure and transverse beams will be established via in-situ concrete stitches. Combined waterproofing and surfacing will then be installed followed by the installation of paving, drainage, landscaping and finishes.

Machinery required will include articulated trucks and a mobile crane (for lifting the deck).

3.10.2.8 River Eske Viaduct Construction

The following sets out the sequence of activity associated with the River Eske crossing.

Establish Site, Sedimentation Control and Substructure Foundations

Initially, the works site will be established on both sides of the river, and sedimentation and pollution control and monitoring measures will be implemented prior to breaking ground. A triple layer of silt fencing will be installed parallel to the works area, along with interceptor ditches with straw bales and settlement ponds. Site clearance will then be carried out to provide sufficient space for the works to be carried out. Once the area is clear, any utilities protections or diversions will be undertaken. For the construction of the River Eske Viaduct, the existing overhead electrical lines will be protected or diverted as per requirements set by the statutory undertaker.

Once the sedimentation control measures and enabling works have taken place, temporary cut off walls will be installed prior to the excavation and piling for the substructure foundations. The foundations will then be excavated behind the cut off wall and dewatered using a pump which will outfall to a settlement pond.

Piling will then be undertaken for the abutments and piers. The final choice of pile type will be subject to detailed site investigation and design, but are likely to be micropiles. In the event that bored piles are necessary, a permanent steel casing will be provided to ensure the risk of contamination will be minimised. Once piling is complete, construction of the reinforced concrete pile caps will be undertaken, involving shuttering, placement of reinforcement cages and pouring and curing of concrete. Management of concrete will be carefully controlled in accordance with the CEMP.

Machinery required will include excavators and dump trucks (for establishing sedimentation control measures and excavating foundations), a piling rig and dewatering pumps.

Substructure Base, Abutments and Pier

Once the pile caps/foundations have been constructed, the abutments and pier plinths will be constructed on both sides of the river. Initially, shuttering will be erected for the reinforced concrete abutments followed by the installation of reinforcement cages. Concrete will then be poured and allowed to cure the appropriate amount of time. Once fully cured the formwork will be struck and removed. Waterproofing will then be applied to any buried concrete faces

to prevent exposure to surrounding ground conditions. Back of wall drainage will be installed at the abutments followed by backfilling and compaction.

At this point a detailed survey will be undertaken establish the position of the abutment and pier plinth tie-ins. At the same time, off-site fabrication of the steel piers and deck at a can be undertaken concurrently, as well as a trial erection off site.

Machinery required will include articulated trucks, concrete mixer; dump trucks, rollers and compactors (for proper compaction), drainage installation equipment, and a mobile crane (for shuttering and reinforcement).

Installation of Bridge Deck

Once the substructure is complete, the V-shaped tubular steel piers will be transported to site and erected, along with temporary bracing. This will be followed by concrete infill to the piers.

The steel superstructure will then be transported to site in segments and erected on the piers/abutments (waterproofing and surfacing to be applied off-site at workshop location). Transportation will be via articulated lorries and low loaders using the temporary accesses created north and south of the river to the adjacent road network.

To provide full deck continuity, field welding and encapsulation of the superstructure will be undertaken at segment joints, followed by the final abutment stitches at the ends to make the structure fully integral. Finally, the paving, drainage, landscaping and finishes will be applied to the structure and approaches, followed by the removal of any temporary pollution control measures once all permanent works are complete and vegetation is established.

Machinery required will include articulated trucks/low loaders and a mobile crane (for lifting the deck).

3.10.2.9 River Finn Viaduct Construction

The following sets out the sequence of activity associated with the River Finn crossing.

Establish Site, Sedimentation Control and Substructure Foundations

Initially, the works site will be established on both sides of the river, and sedimentation and pollution control and monitoring measures will be implemented prior to breaking ground. A triple layer of silt fencing will be installed parallel to the works area, along with interceptor ditches with straw bales and settlement ponds. Site clearance will then be carried out to provide sufficient space for the works to be carried out.

The existing abutment will be utilised on the north side of the River Finn, so new substructure foundations are only required on the south side. This will be constructed by excavating to formation level, stabilising using temporary works and dewatering if required. An existing ditch will be piped east of the proposed structure. The concrete pads will then be constructed for the southern abutment and approach span piers.

Machinery required will include excavators and dump trucks (for establishing sedimentation control measures and excavating foundations), concrete trucks and dewatering pumps.

Substructure Base, Abutments and Piers

Once the foundations have been constructed, the southern abutment and approach span piers will be constructed. Initially, shuttering will be erected for the reinforced concrete abutment followed by the installation of reinforcement cages. Concrete will then be poured and allowed to cure the appropriate amount of time. Once fully cured the formwork will be struck and removed. Waterproofing will then be applied to any buried concrete faces to prevent exposure to surrounding ground conditions. Back of wall drainage will be installed at the abutments followed by backfilling and compaction.

Bearing plinths and pads will be installed on the new southern approach span substructure, existing masonry piers and the existing northern abutment. At this point a detailed survey will be undertaken establish the position of the abutment and pier plinth tie-ins. At the same time, off-site fabrication of the steel lattice girders and curved universal beam sections can be undertaken concurrently, as well as a trial erection at the workshop.

Machinery required will include articulated trucks, dump trucks, rollers and compactors (for proper compaction), drainage installation equipment, and a mobile crane (for shuttering, reinforcement and bearing pads).

Installation of Bridge Deck

Once the substructure is complete, the steel superstructure will be transported to site in segments and erected on the piers/abutments, followed by the erection of the precast concrete deck slabs. There will also be in-situ concrete stitches required to the steel girders. Transportation will be via articulated lorries and low loaders using the temporary accesses created north and south of the river to the adjacent road network.

Once the superstructure is in place, installation of kerbs and parapets will follow, along with waterproofing and surfacing. Paving, drainage, landscaping and finishes will then be installed at the southern end.

On the northern side, construction of the concrete saddle to the masonry arches will take place on northern abutment, followed by installation of precast concrete deck slabs and parapets as described above. Finally, the removal of any temporary pollution control measures will take place once all permanent works are complete and vegetation is established.

Machinery required will include articulated trucks/low loaders and a mobile crane (for lifting the deck).

3.10.2.10 Underpass Construction

To construct the underpass the following sequence of events has been established. Temporary weekend road closures will be required to undertake the construction.

Excavation and Foundation

Initially, the existing carriageway and sublayer to formation level for underpass and retaining wall will be excavated. The excavations will then be stabilised using temporary works (shoring, trench boxes, etc.). Once any temporary works are in place dewatering equipment, if required, is to be installed to ensure formation level remains dry.

Machinery required will include large excavators (for excavating), dump trucks (to remove spoil), and dewatering pumps (to ensure area remains dry).

Once the excavations are complete and safe, any upfill required from formation level will be placed to blinding level, followed by pouring the concrete blinding.

Machinery required will include excavators (for placing upfill), dump trucks (to placing upfill), and concrete ready-mix trucks (for blinding).

Underpass, Retaining Wall & Headwall Construction

Following upfill and blinding, the precast underpass box units will be positioned in place. Precast retaining walls and precast headwalls will then be installed. With all precast units in place any joints and connections between will be sealed.

Machinery required will include a mobile crane (for lifting precast sections into place) and articulated trucks (for delivering precast elements to site).

Once all precast sections are in place and joints are sealed, all buried sections of concrete will be waterproofed, and a drainage system installed at the back of wall to prevent future damage from ground water. Backfill will then be placed and compacted to the rear and top of the underpass and retaining walls. Carriageway surfacing will be laid in accordance with the specifications to ensure a smooth and continuous finish at the finished level. With the carriageway surface complete, the temporary traffic management can be removed and the road reopened.

Machinery required will include excavators (for backfilling and grading), dump trucks (for transporting backfill material), rollers and compactors (for proper compaction), pavers, lorries and drainage installation equipment.

3.10.2.11 Existing Bridges Retrofit

Prior to breaking ground any environmental controls (e.g., silt fences, spill kits) are to be set up to protect any watercourse below. Temporary access routes will then be installed to reduce the area of affected land. With temporary access routes installed and clearly defined, full scaffolding to provide a stable, safe working platform will be erected. This will likely be a scaffold within the arch barrel and standard independent scaffolding on the bridge elevations (spandrels and parapets).

Machinery required will include large excavators (for excavating), scaffolding trucks (delivery of scaffolding); and mobile elevated work platform (MEWP), for close inspections.

With temporary works platforms in place, the masonry arch bridge will require repair and repointing. The masonry will be cleaned (elevations and arch barrel) to remove vegetation, loose mortar, and biological growth. All failed, loose, or soft mortar joints will be raked out (removed) to a specified depth (e.g., 25-50mm) using hand tools or small power tools. The joints will then be repointed using a specified, breathable mortar (typically a lime-based mortar to match the existing construction). This is often done by hand to ensure joints are fully packed. Any significantly damaged or displaced stones (voussoirs) will be identified, removed, and either repaired or replaced.

Machinery required will include pressure washer (for cleaning the stonework), handheld pneumatic breakers (for carefully raking out mortar joints), mortar mixer (for preparing the pointing mortar), and grout pump (for deep voids if found, can be used to inject a flowable lime grout to consolidate the arch).

With all repairs and repointing undertaken, the existing bridge will have a waterproofing layer applied over the entire new concrete saddle. A new drainage system (e.g., weep holes) will be installed to manage water on the deck. The original parapet walls will be reinstalled or a new, compliant greenway parapet/handrail system will be installed. The final greenway surface (e.g., tarmac, resin-bound gravel) will then be laid followed by the dismantling of the temporary works and landscape works.

Machinery required will include telehandler / forklift (for lifting parapet sections, bags of sub-base, and paving materials), tarmac paver (for laying the final surface), vibrating roller (for compacting the sub-base and final surface); and excavator with landscaping rake (for reinstatement of surrounding areas).

Masonry Arch Concrete Saddling will require locating any buried services and undertake temporary diversions in conjunction with the utility owner. Masonry will be exposed by excavating down to arch extrados, and the surface prepared with installation of dowels (if masonry found not to provide sufficient bond to concrete). This will be followed by the erection of formwork at ends of exposed extrados and installation of the mesh reinforcement. With the mesh reinforcement a controlled pour of concrete for the saddle will be laid and left to cure. Waterproofing will then be applied to concrete saddle, followed by build-up of backfill and finally the greenway surfacing course.

Machinery required will include small excavator and handheld equipment, pressure washer (for cleaning the stonework), telehandler / forklift (for lifting formwork), concrete ready-mix trucks (for blinding), dump trucks (for transporting backfill material), and rollers and compactors (for proper compaction).

4. Specific Water Quality Protection Measures

This section outlines the procedures and technical practices for implementing effective erosion and sediment control during the construction phase of the proposed development, through a variety of delivery methods. These practices provide an effective tool for reducing potential environmental effects by:

- Identifying erosion and sediment control objectives before construction;
- Encouraging planning to manage water, control erosion and control sediment by identifying potential impacts and mitigation measures;
- Providing a mechanism for clear communication to workers;
- Defining a performance expectation; and
- Assuring owners and regulators that due diligence has been exercised.

The purpose of this section is to:

- Minimise erosion potential by effective planning, procedures and water management;
- Apply erosion control measures to prevent the movement of sediment; and
- Apply sediment control measures to prevent off-site sediment release in the event of sediment movement.

This section of the CEMP is intended to be a live, working text and, therefore, the measures proposed herein may be added to or amended as the project progresses.

All of the protective measures and procedures included in this section will be implemented in full in order to ensure that sediment laden run-off from the construction site does not enter watercourses / water bodies. It sets out the minimum requirements that must be adhered to by the Contractor – any alternative measures that may be incorporated at the construction stage will be required to provide at least the same or a better standard of protection. These measures are additional to the standard construction measures presented in Section 3 of this CEMP.

4.1 Consultations

Consultation has taken place with the National Parks and Wildlife Services (NPWS), Inland Fisheries Ireland (IFI), Uisce Éireann and the Lough's Agency and their comments / observations with regard to measures and controls for water quality protection have been addressed in this CEMP.

4.2 Scope and Methodology

The protection of lakes, watercourses, karst features and groundwater from pollution arising from construction works is achieved by avoidance in the first instance. Where potential impacts on lakes and watercourses cannot be avoided, the methodology seeks to implement appropriate mitigation during the construction phase to avoid adverse impacts and provide appropriate protection. This plan was completed and should be read with reference to the following documents:

- The European Water Framework Water Framework Directive (WFD) 2000/60/EC – European Communities (Water Policy) Regulations 2003 (SI 722 of 2003) (as amended)
- The Fisheries (Consolidation) Act 1959 (as amended).
- The Fisheries (Amendment) Act 1999 (No. 35 of 1999).
- E.C. (Quality of Salmonid Waters) Regulations 1988 (S.I. No. 293 of 1988).

- The Local Government (Planning and Development) Act 2000 (No. 30 of 2000).
- The Local Government (Water Pollution) Act 1977 (as amended),
- The Surface Water Regulations (S.I. No. 272 of 2009)
- The Wildlife Act (1976), as amended.
- Control of water pollution from construction sites. Guidance for consultants and Contractors (C532) (CIRIA, 2001).
- Control of Water Pollution from Linear Construction Projects. Technical Guidance (C648) (CIRIA, 2006).
- Groundwater Control: Design and Practice, Second Edition, (CIRIA, 2016).
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites. (Eastern Regional Fisheries Board, 2003).
- Maintenance and protection of the Inland Fisheries resource during road construction and improvement works. (Southern Regional Fisheries Board, 2007).
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes CC-ENV-01101; (Transport Infrastructure Ireland 2005).
- Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016)

4.3 Principles of Erosion and Sediment Control

The proposed development is classed as a public road under Section 68(1) of the Roads Act 1993 (as amended). The principles of erosion and sediment control during the construction stage of a road project as outlined in CIRIA C648 (2006) have been included:

- Erosion control (i.e. preventing run-off) is more effective than sediment control in preventing water pollution. Erosion control is less subject to failure from high rainfall, requires less maintenance and is also less costly.
- Plan erosion and sediment controls early in the project lifecycle and incorporate into the design and construction programme.
- Install drainage and run-off controls before starting site clearance and earthworks.
- Minimise the area of exposed ground.
- Prevent run-off and pollutants from entering the site from adjacent ground, as this creates additional polluted water.
- Provide appropriate control and containment measures on site.
- Monitor and maintain erosion and sediment controls throughout the project.
- Establish vegetation as soon as practical on all areas where soil has been exposed.

4.4 Erosion and Sediment Controls

4.4.1 General

The principal objectives in relation to erosion and sediment control during the earthworks operation will be:

- To keep the exposed surface area to an absolute minimum;
- To minimise the amount of run-off from the site;
- To organise the work so that it progresses from the low point towards the high point within each outfall catchment; and

- To have an efficient earthworks operation to ensure that fill is placed as material is removed.

4.4.2 Principal Avoidance Measures

The protection of watercourses from pollution by construction works is achieved through avoidance in the first instance. In this regard, the following measures will be implemented during the construction phase:

i. Site clearance involving topsoil stripping will progress along with the earthworks and will not be carried out over large areas in advance of the earthworks;

ii. Soft soils to be excavated as part of the proposed development will be deposited within the works area as part of the landscaping treatment for the completed earthworks along the route. The use of silt fencing and limiting the proximity of soil improvements to streams and watercourses will limit sediment entering adjacent watercourses and minimise water quality impacts on waterbodies; and

iii. Bridge and watercourse crossing construction will involve clear span bridge structures or culverts over all the significant rivers and streams in order to avoid significant and lengthy works adjacent to major watercourses.

4.4.3 Principal Control Measures – General

This section outlines the principal mitigation and protection measures that will be prescribed for the construction phase in order to protect all the catchments, watercourses and ecologically designated areas. Specific measures are described in Section 4.5. General erosion and sediment control measures will include:

- Maintenance of good site management at all times and all site personnel will be made aware of the importance of the freshwater environment and the requirement to avoid pollution of all types, throughout all stages of the construction phase.
- Surface water flowing onto the construction area will be minimised through the advance construction of silt fences and cut-off ditches (Plate 4-1 below).
- All soiled construction run-off water will pass through sedimentation ponds prior to outfall to the receiving watercourse. These sedimentation ponds may be a combination of temporary settlement ponds and permanent attenuation ponds during the construction phase.
- The storage of oils, fuel, chemicals and hydraulic fluids will be in secure areas within the site compounds and will not occur within a minimum of 10m from watercourses.
- Storage tanks shall have secondary containment provided by means of an above ground bund to capture any oil leakage. Storage tanks and associated provision, including bunds, will conform to the current best practice for oil storage and will be undertaken in accordance with Best Practice Guide BPGCS005 – Oil Storage Guidelines (Enterprise Ireland).
- Protection measures will be put in place to ensure that all hydrocarbons used during the construction phase are appropriately handled, stored and disposed of in accordance to the TII Guidelines for the crossing of watercourses during the construction of National Road Schemes. All chemical and fuel filling locations will be protected from potential spillages through the provision of appropriate protection measures including bunded areas and double skinned bowser units with spill kits.
- Compounds / storage facilities will be located at least 50m away from sensitive watercourses. In addition, measures will be implemented to ensure that silt laden or contaminated surface water run-off from the compound does not discharge directly to the watercourse.
- Foul drainage from all site offices and construction facilities will be taken off-site and disposed of by a licensed Contractor in accordance with legislation to prevent pollution of rivers and local water supply.

Plate 4-1 - Example of cut-off ditch

Plate 4-2 - Typical silt fence usage

- Management of construction material stockpiles to prevent siltation of watercourse systems through run-off during rainstorms will be undertaken. This will involve the construction of collector ditches surrounding material stockpiles to contain run-off and direct it to the settlement ponds (either operational or temporary depending on the construction sequence) before discharge to an adjacent watercourse. In addition, the establishment of vegetation on the exposed soil adjacent to material stockpiles may also be used to slow down and treat (through settlement) run-off waters. A typical example of where silt fences would be employed adjacent to stockpiled material is indicated in Plate 4-2, above.
- Where construction works are carried out alongside stream and river channels, protection of such rivers from silt load will be carried out. This will be through the use of retaining a grassed buffer zone, the provision of silt fences or compacted earthen

berms and where necessary interceptor ditches so as to prevent direct run-off of waters from the construction site to watercourses.

- Where drainage outfalls are to be located, the vegetation at these sites will be stripped immediately prior to the construction of the outfall and a Hessian or equivalent material pinned over all exposed soil following completion. This will be re-seeded using native species of grass only.
- Where required, the pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc., for outfalls, bridges and culverts will be completed in the dry and allowed cure for 48 hours before re-flooding in order to avoid pollution of watercourses.
- Use of settlement ponds, silt traps and bunds and minimising construction adjacent to watercourses. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap. Examples of typical temporary settlement ponds / lagoons are presented in Plate 4-3 – **Error! Reference source not found.**, below.
- Riparian vegetation will be fenced off to provide a 5m buffer zone for its protection. Construction works at crossings will result in the loss of riparian vegetation which will be minimised so as to result in the least amount of disturbance and loss being incurred.
- Any surface water abstracted from a river for use during construction (e.g. over-pumping of a drain) shall be through a pump fitted with a filter to prevent intake of fish.

Plate 4-3 - Typical temporary settlement pond / lagoon

Plate 4-4 - Typical temporary settlement pond / lagoon

Plate 4-5 - Typical temporary settlement pond / lagoon

- The use and management of concrete in or close to watercourses will be carefully controlled to avoid spillage. Alternate construction methods are encouraged for example, use of pre-cast concrete or permanent formwork will reduce the amount of in-situ concreting required. Where on-site batching is proposed by the Contractor, this activity will be carried out away from watercourses (minimum 50m). Washout from such mixing plant and also from concrete delivery trucks will be carried out only in a designated contained impermeable area. A typical washout facility is indicated in Plate 4-6, below.

Plate 4-6 - Typical washout facility

4.5 Mitigation Measures

4.5.1 Watercourse Crossings

Table 4-1 outlines the watercourse crossings which require Section 50 consent. Specific mitigation measures proposed for each of these locations to mitigate risks to water quality have been summarised under a number of headings below. In addition, Figures 1 – 31 in Appendix A outline specific mitigation measures at each location. A list of construction requirements at each of the major / significant river crossings is also provided below.

The works area in the vicinity of each watercourse will be cordoned off prior to any construction activities commencing on site. The provision of triple silt fences along the cordoned work areas will be employed to contain any potential silt or sediment run-off. Where multiple crossings are proposed due to parallel access tracks adjacent to the mainline, a triple silt fence will be provided between the two crossing points to protect from potential sediment run-off at each location.

Table 4-1 - Watercourse Crossings – Section 50

Crossing Reference	Structure Reference	Chainage	Watercourse Name	Structure Type	Diameter (m)
C3	PC03	Clar Link 350	Unnamed	Circular	1.35
C5	S04	Lough Eske Loop 55	River Eske	Bridge	N/A
C10	PC07	2940	Unnamed	Circular	1.2
C11b	PC08	4275	Unnamed	Circular	1.5
C12	PC09	4820	Carbbeagh	Box Culvert	1.83
C13	PC10	5330	Drumnagahan	Circular	1.2
C15	PC11	6420	Milltown	Circular	1.5
C16	S06	6670	River Derg	Bridge	N/A
C17	PC13	6800	Unnamed	Circular	1.2
C18	PC14	6970	Unnamed	Circular	1.5
C19	PC15	7220	Unnamed	Circular	0.9
C29	S10	Biddy's 200	Lowerymore River	Bridge	N/A
C51	PC17	25050	Unnamed	Box Culvert	1.8
C56	S20	29470	River Finn	Bridge	N/A

4.5.2 Temporary Sedimentation Basins

In order to limit the potential for pollution due to run-off from construction, run-off waters will be directed through a sedimentation pond prior to discharge. In this regard, save as set out below, the operational (permanent) attenuation ponds together with the associated outfalls to the receiving watercourse, will be constructed in advance of the main construction works. The purpose of a temporary sedimentation basin is to provide an area where sediment laden run-off is allowed to pond, so that the suspended sediment will settle out.

At specific locations (e.g. the River Eske crossing), it may be necessary to first establish temporary sedimentation basins in areas where it is not possible to construct the operational attenuation ponds in advance of the construction works, or where it will not be possible to outfall to an attenuation pond due to the nature of the works or topography.

In order to ensure that temporary sedimentation ponds are sized correctly, the design parameters to be followed for these ponds is detailed below. Run-off from the exposed surfaces has been calculated using the Modified Rational Method and applying extreme

rainfall information obtained from Met Éireann and specific to the area. The ponds shall be designed to accommodate a depth of rainfall constituting to a 1 in 10-year (14 hour) flood event at 1m depth. Contingency measures shall be in place to release water via a spillway or similar in the event of a more serious rainfall event.

Modified Rational Formula: $Q = C \times i \times A$,

where: Q = peak discharge (m^3 / hour);
C = coefficient of permeability*;
i = rainfall intensity** (m / hour); and
A = contributing area (m^2)

* Conservatively assume 0.6 for a stripped construction site

** The depth of rainfall constituting to a 1 in 10-year (14 hour) flood event at 1m depth

The design of temporary sedimentation ponds shall be carried out as in accordance with *Control of Water Pollution from Construction Sites* (CIRIA, 2001) and *Control of water pollution from linear construction projects* (CIRIA, 2006).

Each temporary pond shall be subject to detailed design by the Contractor. Permanent attenuation ponds which are constructed in advance of the main earthworks, to be utilised during the construction stage shall be sized in accordance with the detailed drainage design to cater for the 1 in 100-year flood event. During the construction stage, accumulated sediment will be removed on a periodic basis. On completion of the road construction works, permanent ponds utilised during the construction stage shall be cleaned of any remaining silt and debris and all necessary works undertaken to establish the required vegetation for the long-term operation of the pond.

4.5.3 Water Quality Protection at Outset of Construction

The initial construction sequence will mitigate potential impacts upon the receiving waters. A triple layer of silt fences along identified work areas adjacent to watercourses (as shown in Figures 1 – 31 in Appendix A) will be provided in advance of works commencing on site to contain silt and sediment run-off. Pre-earthwork ditches will then be provided in order to collect surface run-off during the start of construction. On completion of the earthworks, the drainage along this section will be established as soon as is practicable.

Once the permanent drainage has been installed, it will outfall to one of the proposed attenuation pond locations. During the construction stage, temporary drainage measures will be employed to connect this drainage to the attenuation ponds where required, or in certain instances to a temporary settlement pond. This will prevent untreated surface water run-off discharging to existing watercourses.

4.5.4 Requirements at Sensitive Watercourses

Specific erosion and sediment control measures are proposed for the River Eske and River Finn on the following plans.

- Plan drawing of River Eske and S01 – Drawing No. 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0001 in Appendix A;
- Plan drawing of River Eske S04 – Drawing No. 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0004 in Appendix A;
- Plan drawing of River Finn and S20 – Drawing No. 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0028 in Appendix A; and
- Typical section drawing showing phased construction – Drawing No. 60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0032 in Appendix A.

These set out how the use of triple silt fences, interceptor ditches, settlement ponds and pre-earthworks drainage will be installed prior to any construction works commencing to avoid any sediment from the construction works at these particularly sensitive locations from entering the watercourses.

The following standard measures will also be employed across all watercourses:

i. A suitably qualified ECoW project ecologist will be employed by the Contractor to ensure successful implementation of the mitigation measures.

ii. Throughout all stages of the construction phase of the project the Contractor will ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the freshwater environments and the requirement to avoid pollution of all types.

iii. All design, construction and operation will be carried out in accordance with *Guidelines for the Crossing of Watercourses During the Construction of National Road Schemes CC-ENV-01101* (TII, 2005) and *Control of water pollution from construction sites; Guidance for Consultants and Contractors* (C532) (CIRIA, 2001) and *Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Waters* (IFI, 2016).

iv. An Incident Response Plan will be established to deal with incidents or accidents during construction that may give rise to pollution within any watercourse. This will include means of containment in the event of accidental spillage of hydrocarbons or other pollutants (including oil booms, soakage pads, *etc*.).

v. Where further pre-construction site investigation (including archaeological works) is required in the vicinity of or adjacent to any watercourses, these works will be carried out with due sensitivity and appropriate measures employed to minimise siltation.

vi. Site compounds and soil storage areas will be located at a minimum distance of 50m from any watercourse. All drainage from these facilities will be directed through a settlement pond with appropriate capacity and measures to provide spill containment.

vii. Sediment traps or settlement ponds will be provided for all watercourses during construction. Total suspended solid levels in all waters discharging to any watercourse shall not exceed 25mg/l. All construction site run-off will be channelled through a stilling process to allow suspended solids to settle out and through some form of spill-containment facility prior to discharge to the drainage network.

viii. The storage of oils, hydraulic fluids, *etc*., will be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005).

ix. The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, *etc*., will be completed in the dry to avoid pollution of the freshwater environment.

x. All machinery operating in-stream will be steam-cleaned in advance of works and routinely checked to ensure no leakage of oils or lubricants occurs. All fuelling of machinery will be undertaken on dry land.

xi. In-stream works on all watercourses supporting salmonids shall be undertaken during the period 1st July to 30th September, as required by IFI, to avoid accidental damage or siltation of spawning beds. This will include preparatory work such as piling or rock blasting in the vicinity of watercourses. Bank works will not interfere with migrating fish from March to June and spawning fish migration from October to February.

xii. Clear span structures and box culverts will be used on watercourses as specified in Table 4-1 above. Where culverts are proposed, these shall as a minimum match the existing width of the watercourse.

xiii. Culvert designs have avoided impacting on flow regimes and riverbed profiles upstream and downstream of the structure and allow for unimpeded movement of fish by ensuring a minimum depth of water within the structure. Flow regimes for all crossings identified as supporting salmonids shall allow for the unimpeded passage

of fish upstream and downstream, by having the invert buried 500mm below bed level, be open bottomed or be clear spanning.

xiv. Where watercourses require re-alignment, the designs incorporate sinuosity and varied flow regimes with substrate composition to reconstruct a natural river system in both plan and profile. Realignments will tie in with the upstream and downstream sections of the existing channel. Landscaping along realigned sections of watercourse will aim to recreate riparian habitats using exclusively appropriate native species.

xv. Culvert construction and watercourse realignment will take place offline to allow the existing channel to remain in place as long as possible. After the culvert/diversion is in place, any necessary rip/rap or scour protection measures will be installed next followed by the installation of the natural bed. Excavated material from the natural channel can be used at the upstream and downstream tie-in. Where fish are present, consideration will be required for resting pools upstream and downstream of the culvert. The watercourse will then be diverted and allow for greenway construction activities to proceed.

xvi. New stretches of watercourse on realignments will be completed and have vegetation established prior to connecting to the original watercourse. Abandoned stretches will be electro-fished by suitably qualified personnel (under licence from IFI or NPWS as appropriate) to salvage fish and white-clawed crayfish where identified as occurring or having the potential to occur.

xvii. The risk of accidental transfer of non-native invasive species will require adherence to current BPGs for avoiding the spread or transfer of all invasive plants and animals in accordance with TII guidance documents *The Management of Invasive Alien Plant Species on National Roads – Standard (GE_ENV-01104)* (TII, 2020a) and *The Management of Invasive Alien Plant Species on National Roads - Technical Guidance (GE-ENV-01105) (TII, 2020b),* along with any modified or updated approaches to invasive alien species control (www.invasivespeciesireland.com).

xviii. These measures will be enforced during construction to ensure accidental spread does not occur on machinery or materials from / to the site. The developers will also adopt any modified or updated approaches to invasive alien species control.

xix. Where concrete or other wet materials are to be used, bunded steel decks will be used to capture any spilled concrete, alkaline water displaced from inside tubular steel piles or spilled sealants or other materials.

xx. Any such materials collected on these platforms will be transferred to the landside construction areas and disposed of in accordance with the Resource Waste Management Plan.

4.5.5 Water Management and Monitoring Plan

A Water Management Plan and Monitoring Plan will be prepared as part of the CEMP. The scope of the groundwater quality and level monitoring is to be developed in consultation with relevant stakeholders. Details of pre-construction and construction groundwater level and quality monitoring is to be provided. Water level monitoring will be required at selected GI monitoring boreholes, adjacent to sensitive water bodies, GWDTEs and abstractions, and adjacent to construction locations requiring dewatering. To minimise the impact of any groundwater control activities during construction on the water receptors, a Construction Groundwater Control Strategy will be prepared by the Contractor at the detailed design stage, in consideration of CIRIA's Groundwater Control: Design and Practice, Second Edition (CIRIA, 2016).

5. Schedule of Environmental Commitments

Project environmental mitigation has been set out in the planning application documentation, in the EIAR and NIS, and will be detailed in the Contractor's CEMP, in accordance with this CEMP. The Contractor's CEMP will provide a framework for compliance auditing and inspection to ensure that these construction practices and mitigation measures, as set out in the EIAR and NIS and the conditions in the planning approval, are adhered to. Appendix B Schedule of Environmental Commitments details the mitigation measures provided in Chapter 21 Summary of Mitigation and Monitoring Measures. Any modifications or conditions imposed by An Coimisiún Pleanála are contained in Appendix C.

6. Resource and Waste Management Plan

In keeping with the Northern & Western Regional Assembly (NWRA) Regional Spatial and Economic Strategy (RSES) and the Connacht Ulster Regional Waste Management Plan (CURWMP) aims of *efficiently using, reusing, and conserving natural resources by managing waste and optimising technologies that promote a circular economy,* the Contractor will be required to prepare a Resource and Waste Management Plan (RWMP), which will be underpinned by:

- TII's Circular Economy Policy, Strategy and Greenways and Rural Cycleways Guide, including principles such as material re-use, establishing digital material logs and minimising construction plant
- Legislation including Waste Management Act 1996, Environmental Protection Agency Act 1992 and Litter Pollution Act 1997
- EPA guidance (Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects, EPA 2021
- The Waste Hierarchy, with waste prevention and minimisation being the first priority, followed by reuse and recycling

The RWMP is contained within Appendix E to this CEMP.

The purpose of the RWMP is to ensure that the production of waste is minimised where possible, and that waste arising during construction is managed and disposed of appropriately. The RWMP is a live document that will be amended and updated to reflect current conditions on site as the project progresses. The Contractor will also appoint a suitable site representative as Waste Manager who will have overall responsibility for the management of waste.

The Contractor's RWMP shall contain the following elements:

- Details of waste segregation and storage (e.g. tanks, skips, bins, containers or areas within the compounds)
- Details of where and how materials are to be disposed of, i.e. landfill or other appropriately licensed waste management facilities, and details of all relevant permits, licenses and record keeping;
- Details of how waste will be recycled and reused within the project as far as possible
- Details of how and where hazardous waste (such as hydrocarbons or chemical wates) will be disposed where necessary
- Details of waste sources and quantities, including from site clearance, excavations and disposal
- Details of construction vehicle management
- Details of dust and noise remediation measures

Table 6-1 below outlines the anticipated waste types and sources form the proposed development.

Table 6-1 - Waste Type & Source(s)

Waste Type	Source(s)	Action
Soil (uncontaminated)	Excavation for greenway alignment	To be reused on site where possible
Vegetation (uncontaminated)	Removal of vegetation within route corridor and trailheads	Recycling through mulching and composting

Waste Type	Source(s)	Action
Construction waste including concrete, steel, timber and paint	Construction and repair of structures, shuttering, temporary signage, fencing, road markings	Material procurement to be optimised to reduce waste, timber shuttering to be reused. Any excess material to be segregated and disposed of appropriately
Non-hazardous waste, such as plastic, paper / cardboard and food waste	Offices, packaging, canteens and welfare facilities	Inclusion of recycling facilities in site compounds
Oils/Hydrocarbons	Unused fuel and oil changes from machinery and plant	Appropriate storage, mitigation measures including spill kits
Contaminated Soil and or Vegetation	Invasive species, peat (if contaminated)	Disposal to authorised facility by licensed waste carriers. Applications for necessary licenses.
Wastewater	Welfare facilities and canteens	Apply water reduction measures. Applications for necessary licenses.

7. Incident Response Plan

The Incident Response Plan (IRP) describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances. The IRP is contained within Appendix F to this CEMP.

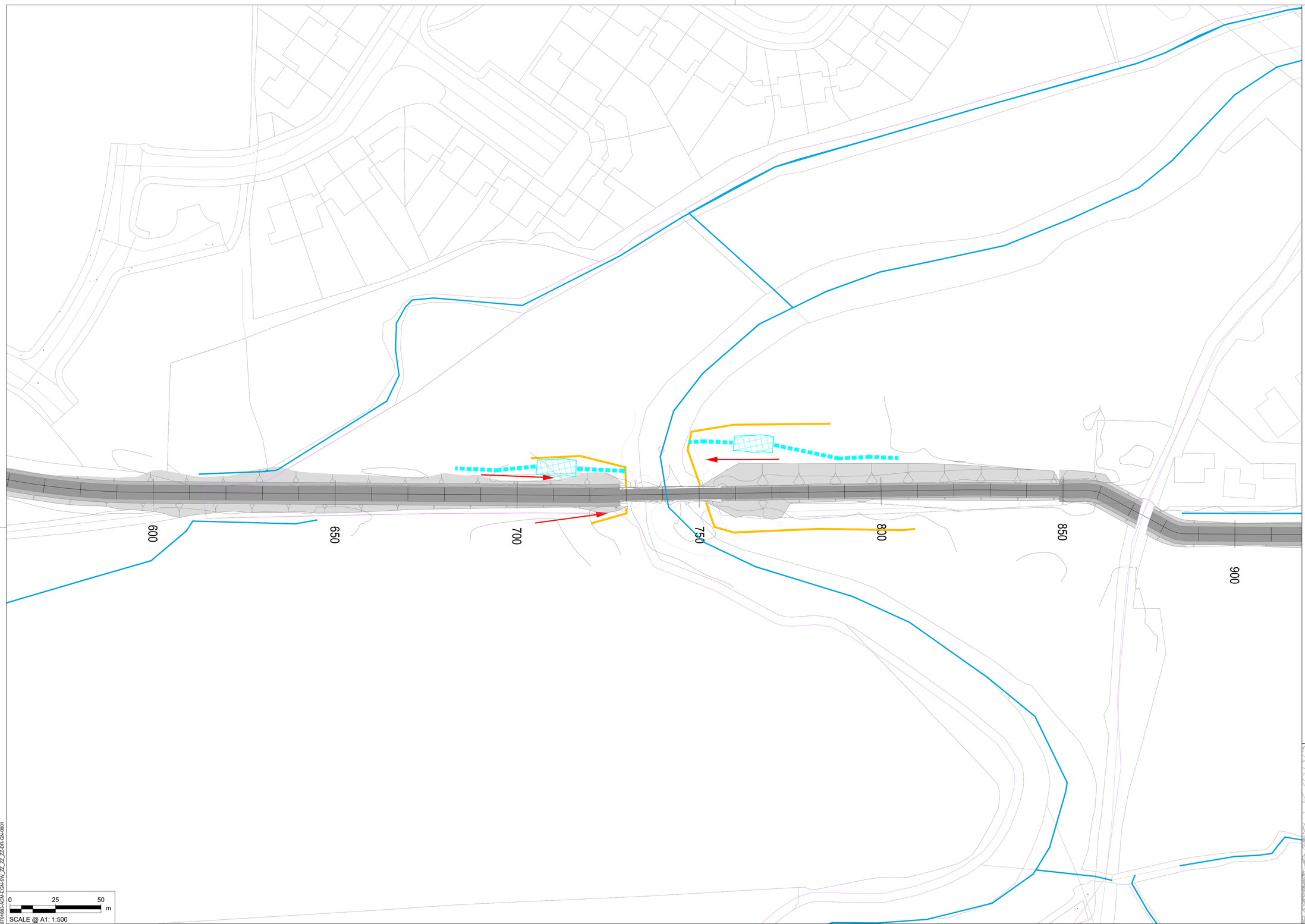
Appendix A

Erosion & Sediment Control Figures

Barnesmore Gap Greenway

Appendix 4.1A: Erosion & Sediment Control Measures

Donegal County Council



NOTES

1. DO NOT SCALE FROM THIS DRAWING. USE FIGURED DIMENSIONS ONLY. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. ITEMS IN GREY REPRESENT THE EXISTING LAYOUT AND INFRASTRUCTURE UNLESS OTHERWISE STATED.
3. DRAWING IS BASED ON OS MAPPING.
4. EXISTING SURFACE DATA BASED ON MULTIPLE SOURCES;
   - 4.1. LIDAR SURVEY DATA PROVIDED BY TII ON 06/06/2024.
   - 4.2. UAV SURVEY DATA PROVIDED BY IO GEOMATICS ON 21/10/2024.
   - 4.3. TOPO SURVEY DATA PROVIDED BY IO GEOMATICS ON 02/09/2025.
5. COLOURS SHOWN IN THESE DRAWINGS ARE INDICATIVE AND SHOULD NOT BE CONFUSED WITH THOSE OF FINISHED SURFACES.
6. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DOCUMENTATION.

KEY

- WATERCOURSE
- SAC

PHASE 1

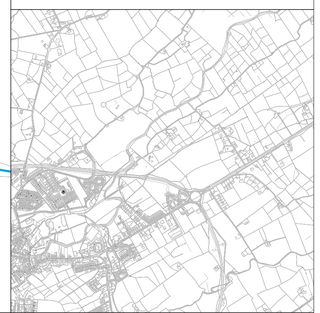
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithne Náisiúnta Dhún na nGall

Greenway

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Purpose of issue

FOR INFORMATION

	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02

REVISION DETAILS

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

IT IS ASSUMED THAT ALL WORKS ON THIS DRAWING WILL BE CARRIED OUT BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROPRIATE METHOD STATEMENT.

THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT.

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Project Title

Barnesmore Gap Greenway

Drawing Title

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

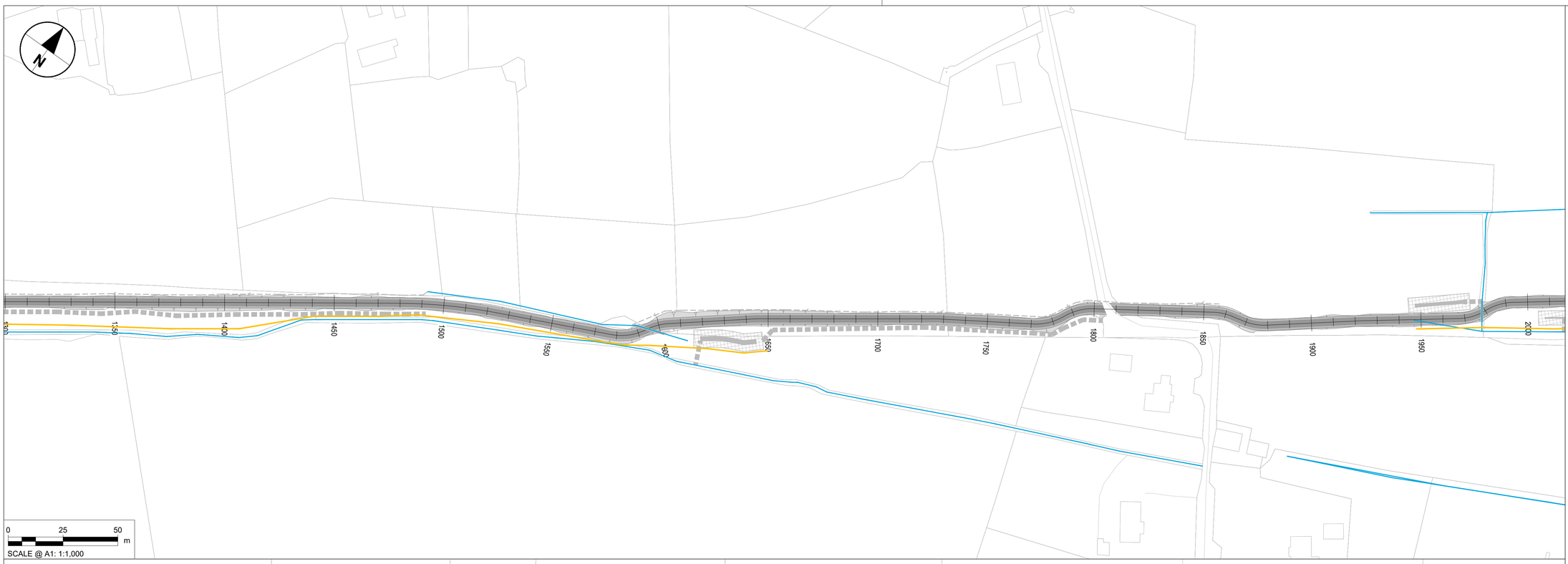
Internal Project No.	Suitability
60701883	S2

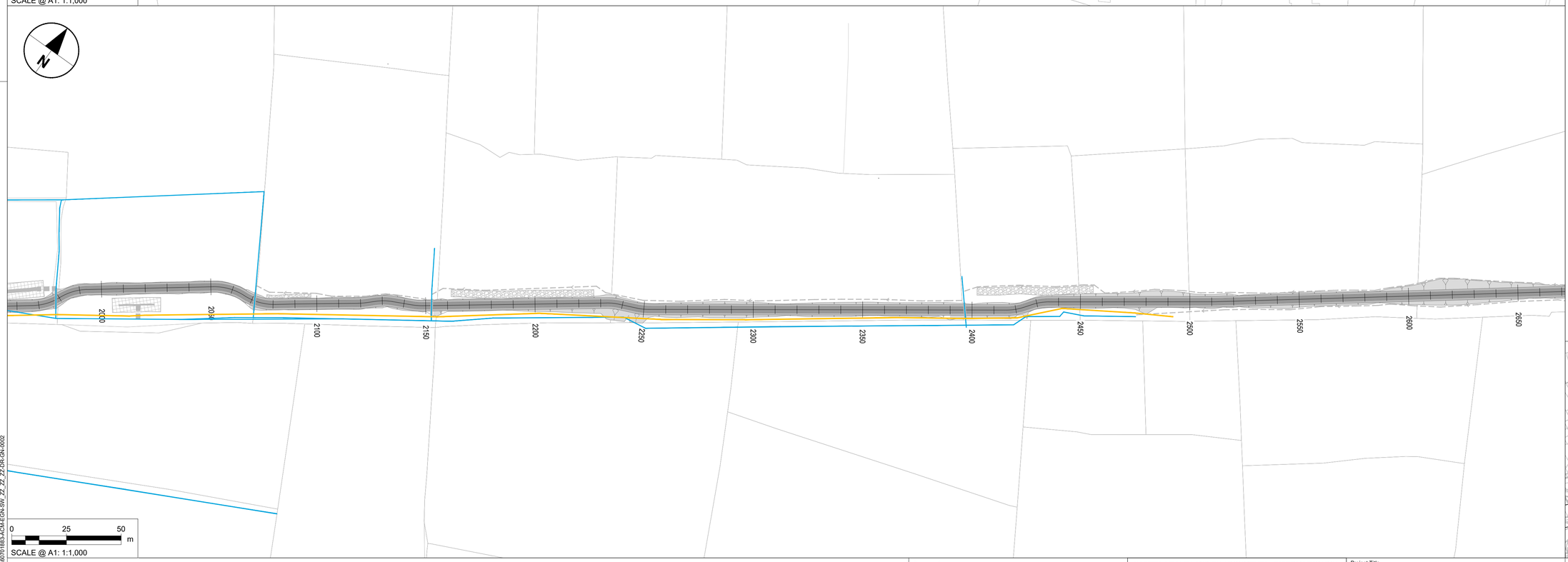
Scale @ A1	Volume
1:2500	General

Drawing Number	Rev
60701883 -ACM -EGN - SW_ZZ_ZZ_ZZ -DR -GN-0001	P02

Aecom Project ID | Originator | Volume | Location | Type | Role | Number

Plot Date: 27 March 2026 15:48:49
File Name: C:\Drive\ROD-AECOM_DS06_EU\D0173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0001





NOTES

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KEY

- WATERCOURSE
- SAC

PHASE 1

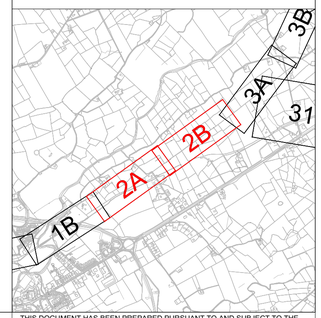
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

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Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 1

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

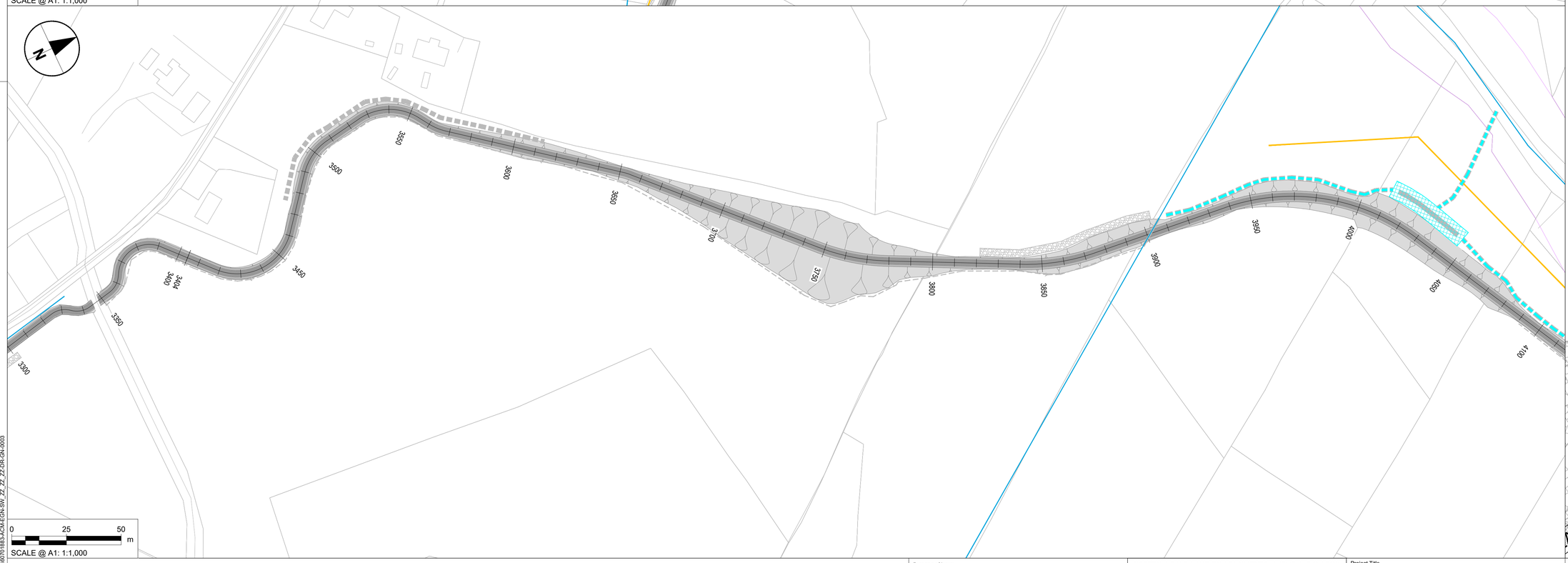
Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID: 60701883 | Originator: -ACM | Volume: -EGN - | Location: SW_ZZ_ZZ_ZZ | Type: -DR | Role: -GN | Number: -0002

Rev: P02

Plot Date: 27 March 2026, 15:44:00
File Name: C:\Users\ROD\AECOM_DS06_EU\60173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0002



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KEY

- WATERCOURSE
- SAC

PHASE 1

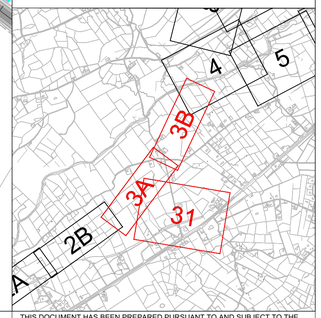
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

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Plot Date: 27 March 2026, 15:49:33
File Name: C:\Work\Projects\AECOM_DS06_EU\60170306\60701883-ACM-EGN-SW_ZZ_ZZ_DR-GN-0003

Purpose of issue

FOR INFORMATION

	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02

REVISION DETAILS

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 2

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

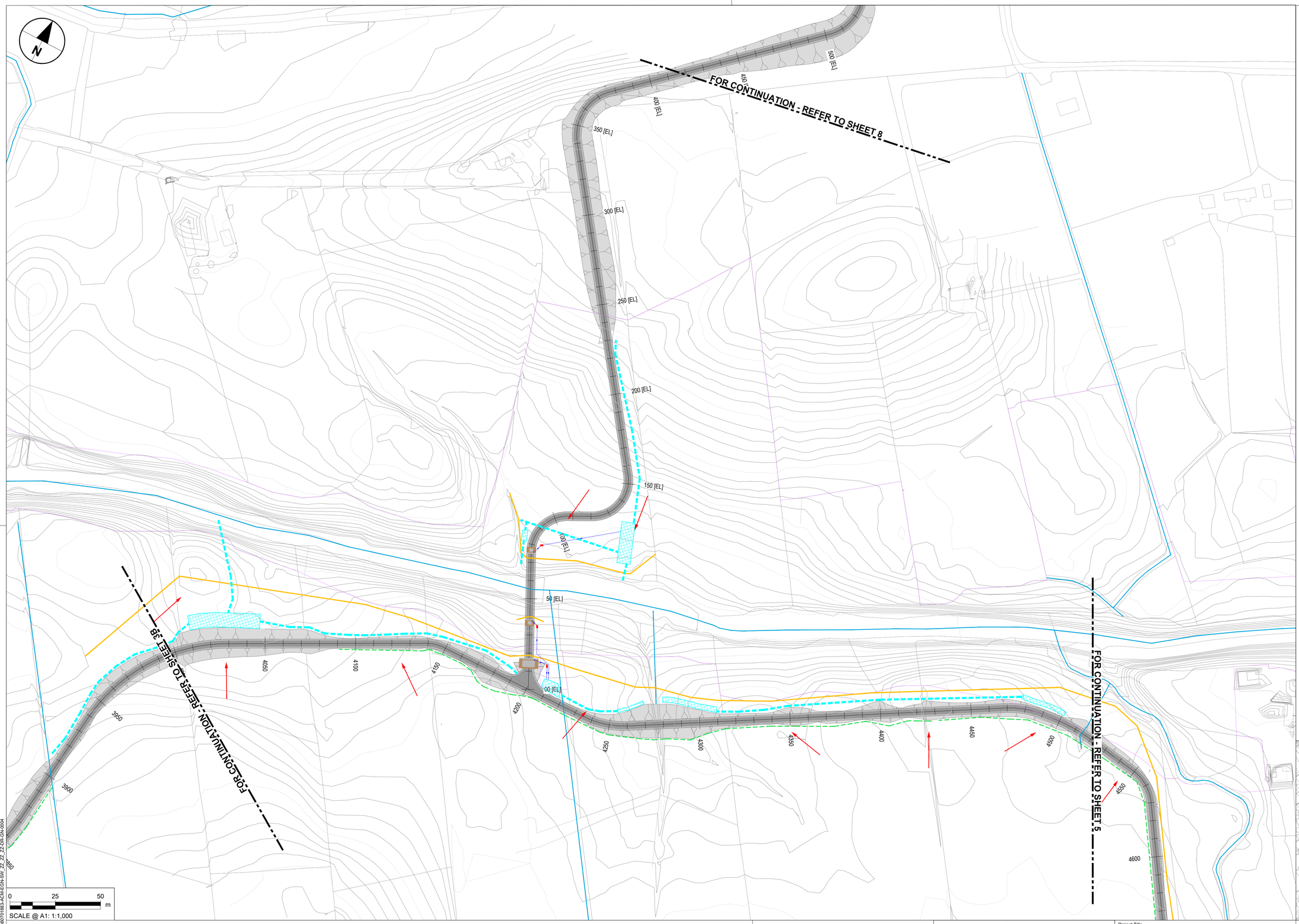
Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number
60701883	-ACM	-EGN -	SW_ZZ_ZZ_ZZ	-DR	-GN	-0003

Rev: P02



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KEY

- WATERCOURSE
- SAC

PHASE 1

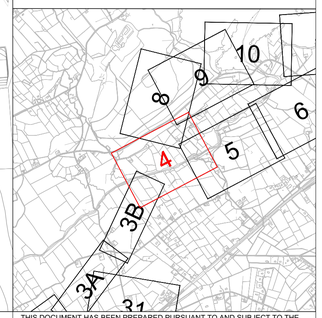
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

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Plot Date: 30 March 2026 12:04:40
File Name: C:\PWWORKING\AECOM_DS06_EU\60170990\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0004

Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP EROSION & SEDIMENT CONTROL MEASURES RIVER ESKE

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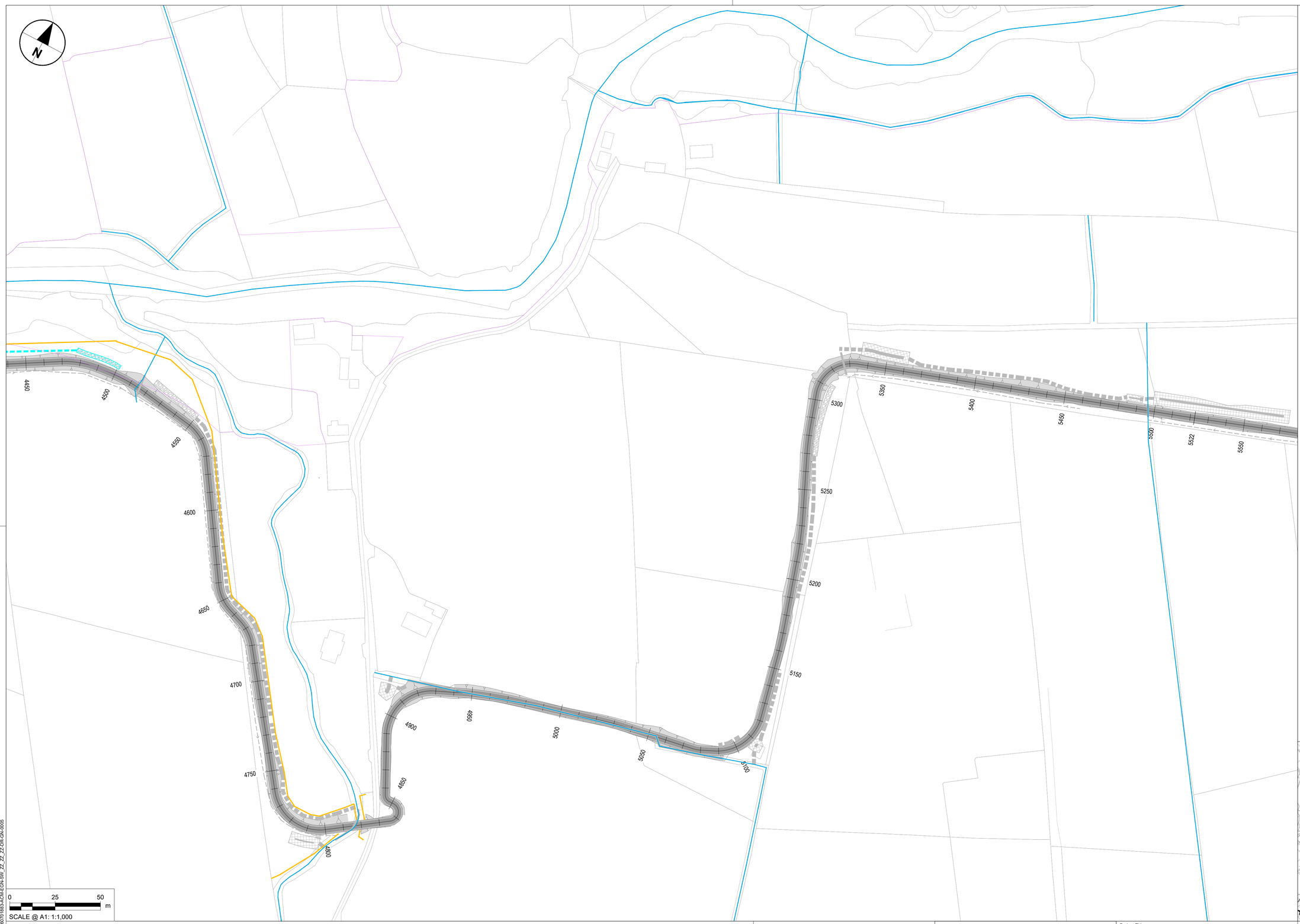
Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.: 60701883
Suitability: S2
Scale @ A1: 1:2500
Volume: General

Drawing Number
Aecom Project ID: 60701883 | Originator: -ACM | Volume: -EGN - | Location: SW_ZZ_ZZ_ZZ | Type: -DR | Role: -GN | Number: -0004

Rev: P02



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KEY

- WATERCOURSE
- SAC

PHASE 1

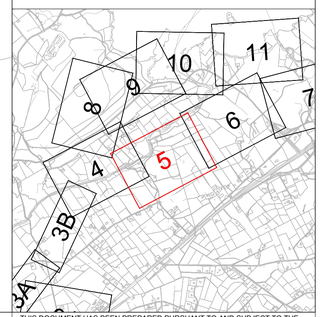
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

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FOR INFORMATION

	By	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02
REVISION DETAILS	By / Check	Date	Suffix

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 3

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number	Rev
60701883	-ACM	-EGN -	SW_ZZ_ZZ_ZZ	-DR	-GN	-0005	P02

Plot Date : 27 March 2026, 5:54:23
File Name: C:\Work\Roughan&O'Donovan_DS06_EU\0173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0005

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KEY

WATERCOURSE

SAC

PHASE 1

TRIPLE SILT FENCE

PHASE 2

PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)

INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)

SETTLEMENT POND

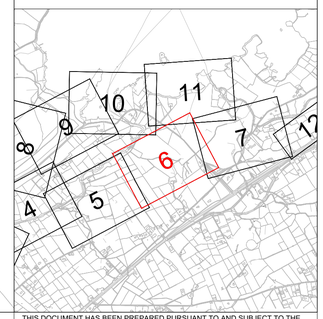
PHASE 3

6" PUMP BUNDED

DEWATERING SUMP

ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL

PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Plot Date: 27 March 2026, 15:56:32
File Name: C:\PROWORKS\AECOM_DS06_EU\0017309060\701883-ACM-EGN-SW_ZZ_ZZ_DR-GN-0006

Purpose of issue

FOR INFORMATION

	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02
REVISION DETAILS				

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 4

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number				Rev
Aecom Project ID	Originator	Volume		
60701883	-ACM	-EGN -		P02
SW_ZZ_ZZ_ZZ	-DR	-GN-0006		
Location	Type	Role	Number	

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KEY

- WATERCOURSE
- SAC

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- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
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- 6" PUMP BUNDED
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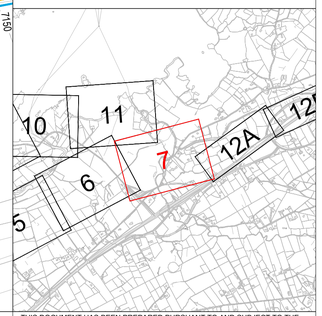

Tionscadal Éireann Project Ireland 2040

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Greenway

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FOR INFORMATION

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Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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Dublin 18
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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 5

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.: 60701883
Suitability: S2
Scale @ A1: 1:2500
Volume: General

Drawing Number: Aecom Project ID 60701883 - Originator -ACM - Volume -EGN - Location SW_ZZ_ZZ_ZZ - Type -DR - Role -GN - Number -0007

Rev: P02

Plot Date: 30 March 2026 12:08:26
File Name: G:\PWD\60701883\ACDM_DS06_EU\0017306\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0007

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   - 4.3. TOPO SURVEY DATA PROVIDED BY IO GEOMATICS ON 02/09/2025.
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KEY

- WATERCOURSE
- SAC

PHASE 1

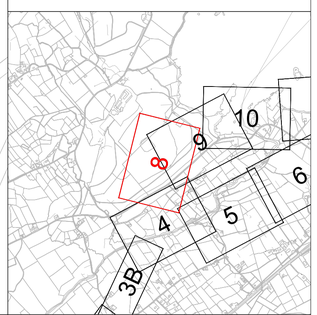
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRDO Oifig Boithre Náisiúnta Dhún na nGall

Greenway

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Purpose of issue

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	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02
REVISION DETAILS				

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 6

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.: 60701883
Suitability: S2
Scale @ A1: 1:2500
Volume: General

Drawing Number: 60701883 - ACM - EGN - SW_ZZ_ZZ_ZZ - DR - GN-0008
(Location | Originator | Volume | Type | Role | Number)
Rev: P02

Plot Date: 30 March 2026 10:43:13
File Name: C:\PW\WORKING\ACCM_DS\60_EU\DO\173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0008

NOTES

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KEY

- WATERCOURSE
- SAC

PHASE 1

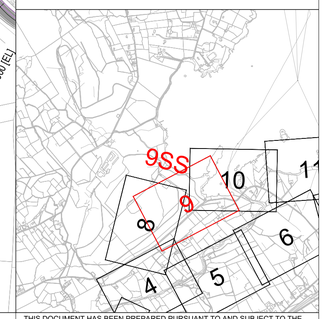
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Plot Date: 30 March 2026 10:38:30
File Name: C:\PWWORKING\AECOM_DS06_EU\D0173060\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0009

Purpose of issue

FOR INFORMATION

	By	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 7

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Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID | Originator | Volume
60701883 -ACM EGN -
SW_ZZ_ZZ_ZZ -DR -GN-0009
Location | Type | Role | Number

Rev: P02

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KEY

- WATERCOURSE
- SAC

PHASE 1

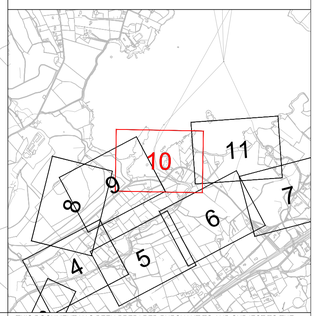
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 8

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Designed	Drawn	Checked	Approved	Date
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Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number: 60701883 (Aecom Project ID) - ACM (Originator) - EGN (Volume) - SW_ZZ_ZZ_ZZ (Location) - DR (Type) - GN (Role) - 0010 (Number)

Rev: P02

File Date: 30 March 2026 10:35:19
File Name: G:\PWO\ROD\ACCOM_DS\60_EU\0\0173909\0701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0010

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KEY

- WATERCOURSE
- SAC

PHASE 1

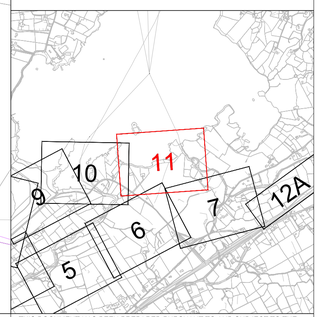
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



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Initial Revision	IL / DK	27/03/26	P01
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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 9

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---	IL	IL	DK	27/03/26

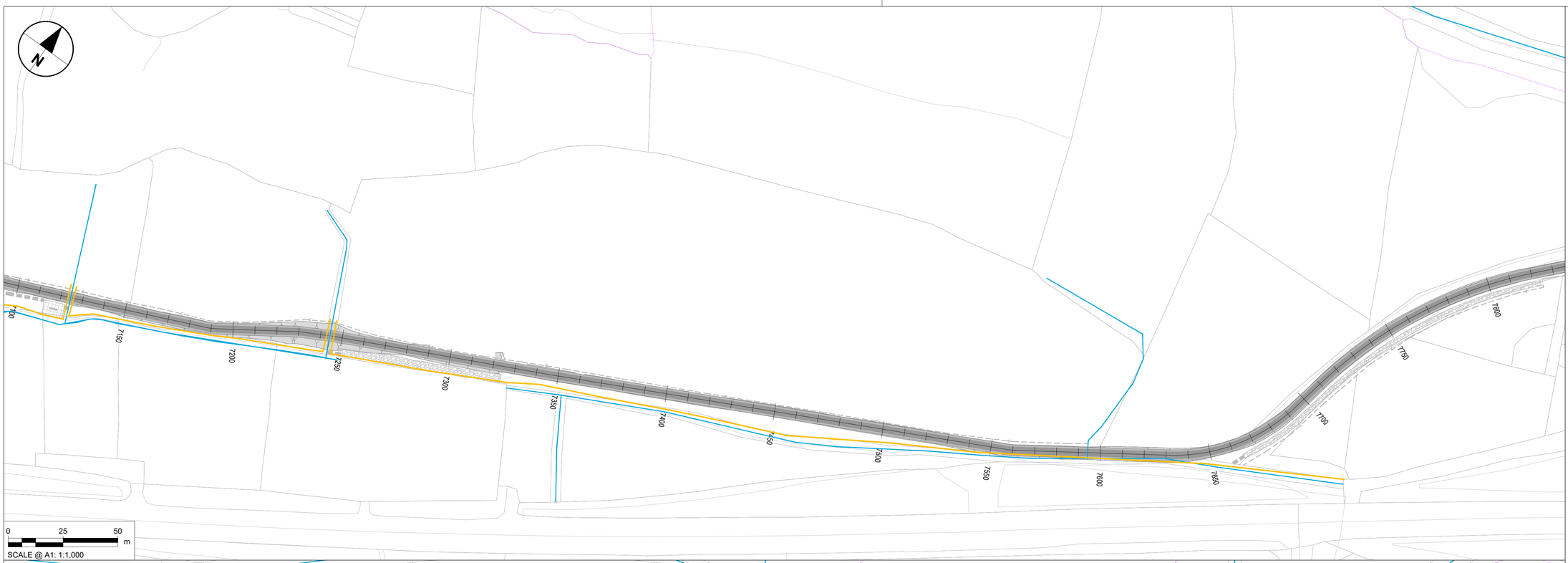
Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Rev
60701883 SW_ZZ_ZZ_ZZ	-ACM	-EGN -DR -GN-0011	P02
Location		Type Role Number	

Plot Date : 30 March 2026 12:15:36
File Name : C:\PWWORK\ACECOM_DS06_EU\0173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0011



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KEY

- WATERCOURSE
- SAC

PHASE 1

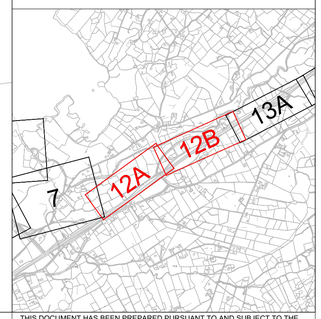
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Comhairle Contae Dhún na nGall Donegal County Council

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FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 10

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Designed	Drawn	Checked	Approved	Date
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Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number				Rev
Aecom Project ID	Originator	Volume		
60701883	-ACM	-EGN	-	P02
SW_ZZ_ZZ_ZZ	-DR	-GN	-0012	
Location	Type	Role	Number	

Plot Date: 27 March 2026 16:10:39
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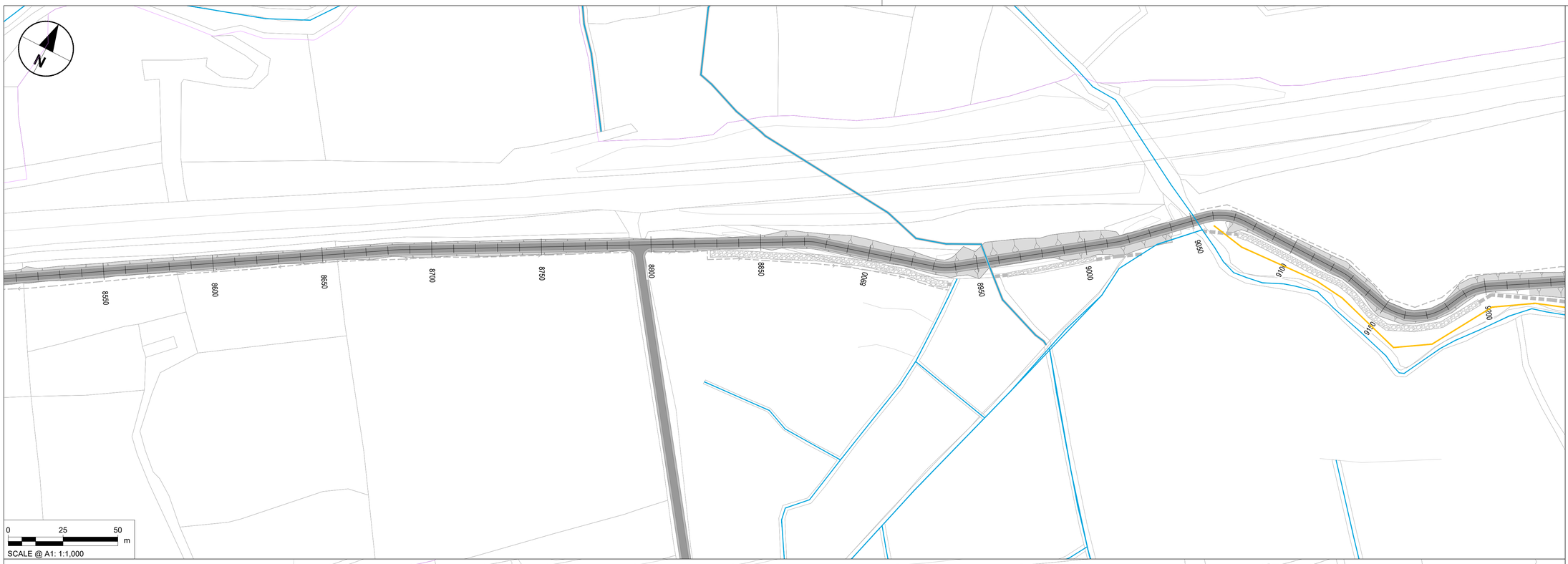

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KEY

- WATERCOURSE
- SAC

PHASE 1

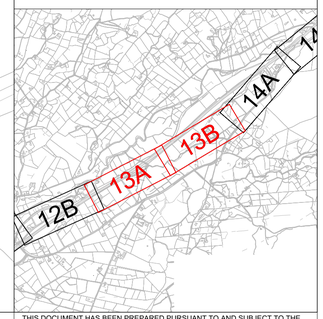
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

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Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 11

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID - Originator - Volume
60701883 - ACM - EGN - SW_ZZ_ZZ_ZZ - DR - GN - 0013
Location - Type - Role - Number

Rev: P02

Plot Date: 27 March 2026 16:13:57
File Name: C:\PW\WORK\60701883\ACM_DS06_EU001730906\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0013

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KEY

- WATERCOURSE
- SAC

PHASE 1

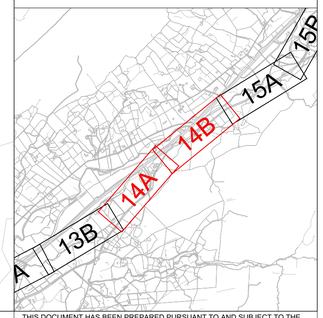
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithne Náisiúnta Dhún na nGall

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Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 12

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Designed	Drawn	Checked	Approved	Date
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Internal Project No. 60701883 | Suitability S2

Scale @ A1 1:2500 | Volume General

Drawing Number: Aecom Project ID 60701883 - Originator -ACM - Volume -EGN - Location SW_ZZ_ZZ_ZZ - Type -DR - Role -GN - Number 0014

Rev P02

Plot Date: 27 March 2026 16:20:12
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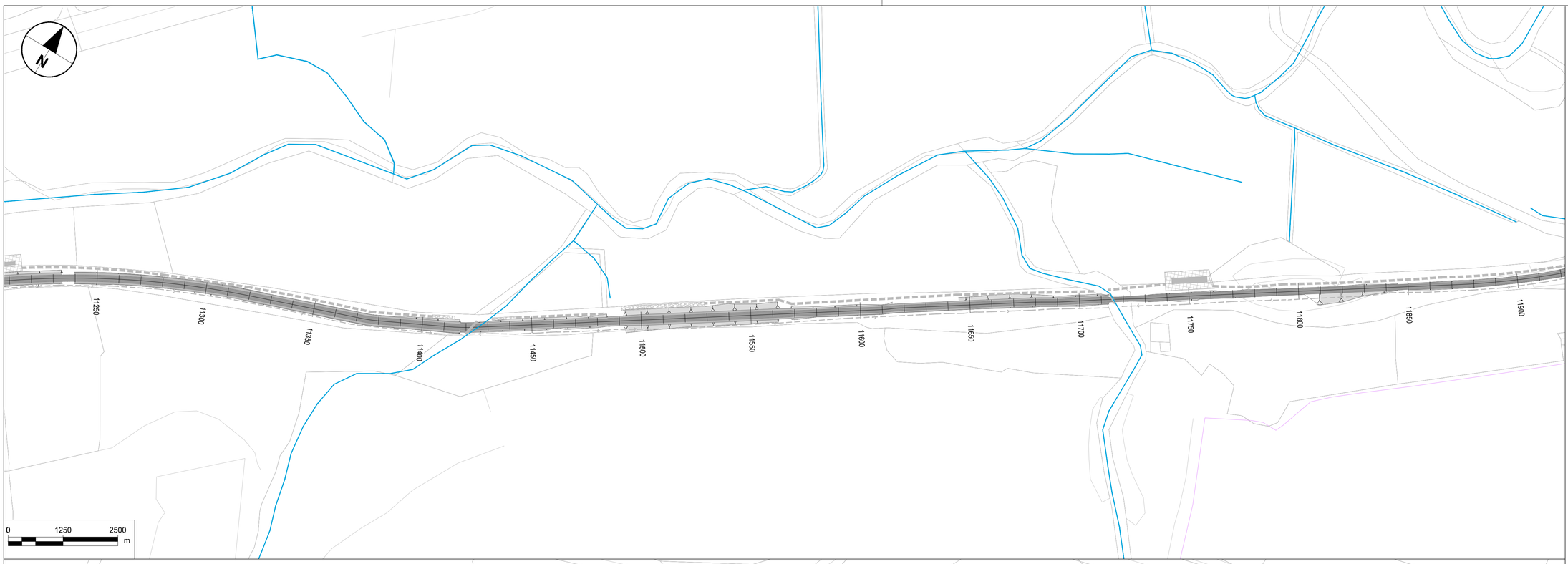

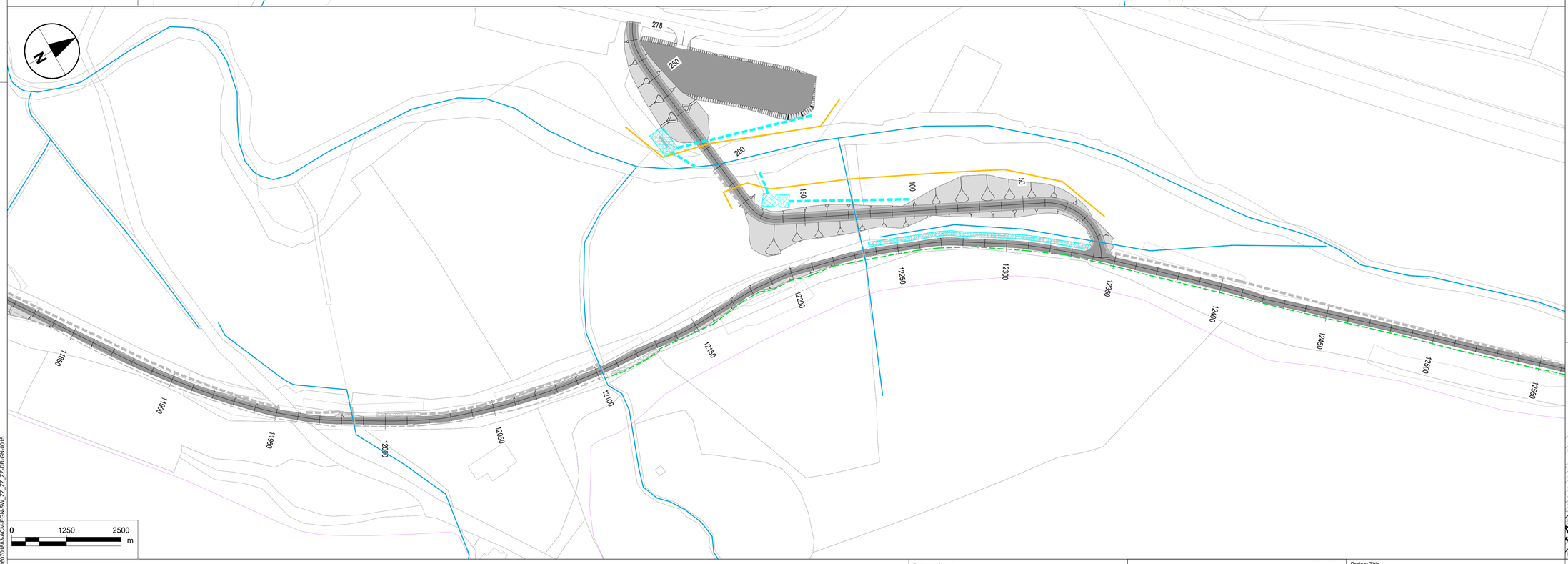

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KEY

- WATERCOURSE
- SAC

PHASE 1

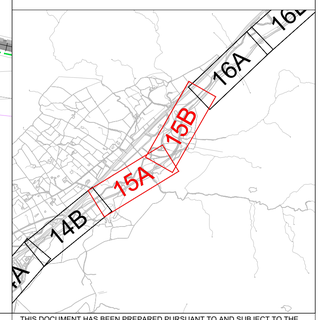
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

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Plot Date: 27 March 2026, 16:24:23
File Name: C:\WWORKING\AECOM_DS05_EU\0017390\60701883\ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0015

Purpose of issue

FOR INFORMATION

	By	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02
REVISION DETAILS	By / Check	Date	Suffix

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 13

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---	IL	IL	DK	27/03/26

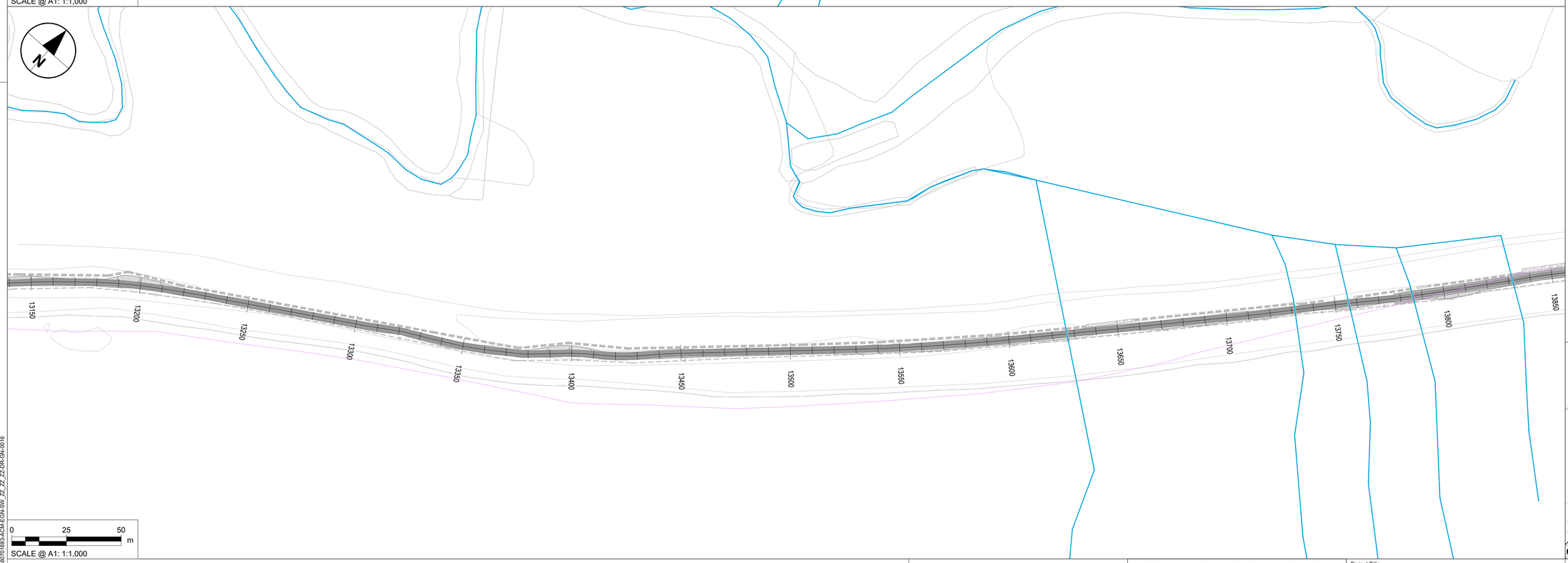
Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number
60701883	-ACM	-EGN -	SW_ZZ_ZZ_ZZ	-DR	-GN	-0015

Rev: P02



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KEY

- WATERCOURSE
- SAC

PHASE 1

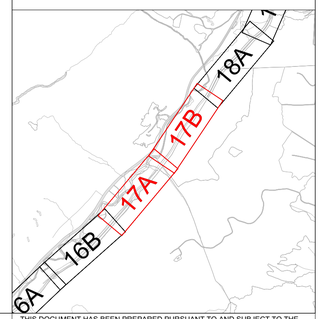
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02

REVISION DETAILS

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 14

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number	Rev
60701883	-ACM	-EGN	SW_ZZ_ZZ_ZZ	-DR	-GN	-0016	P02

Plot Date : 27 March 2026, 16:23:05
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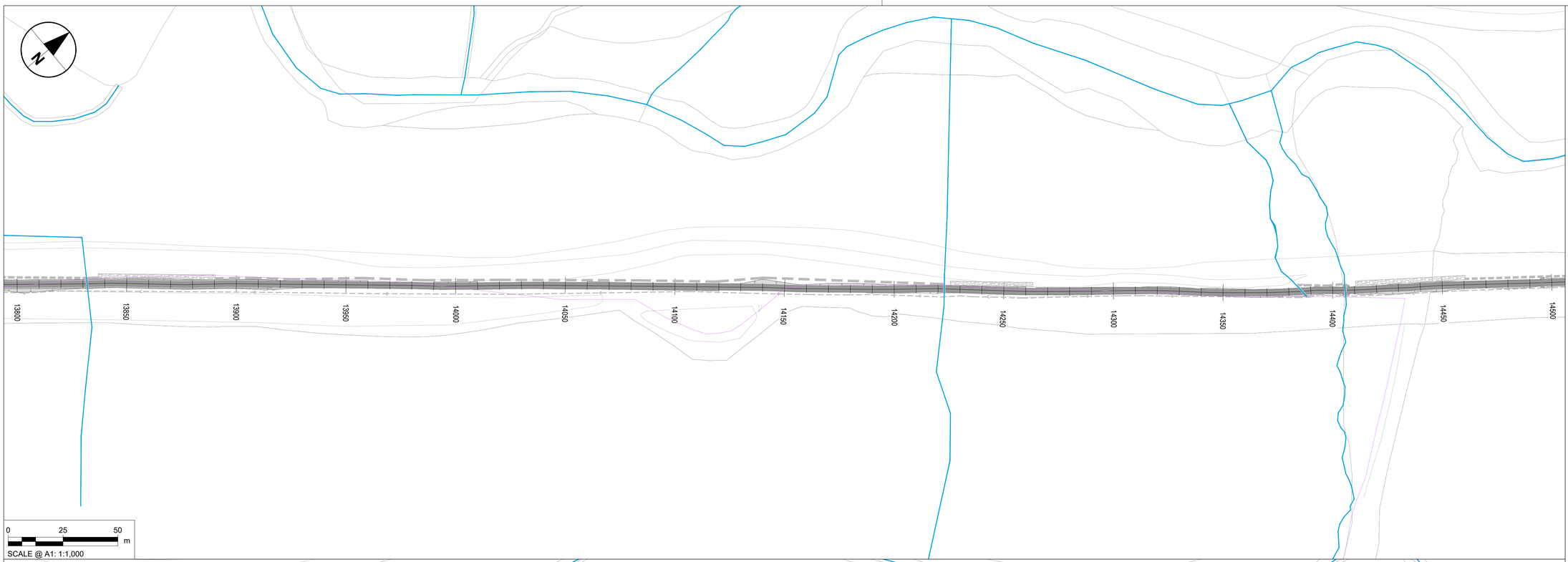

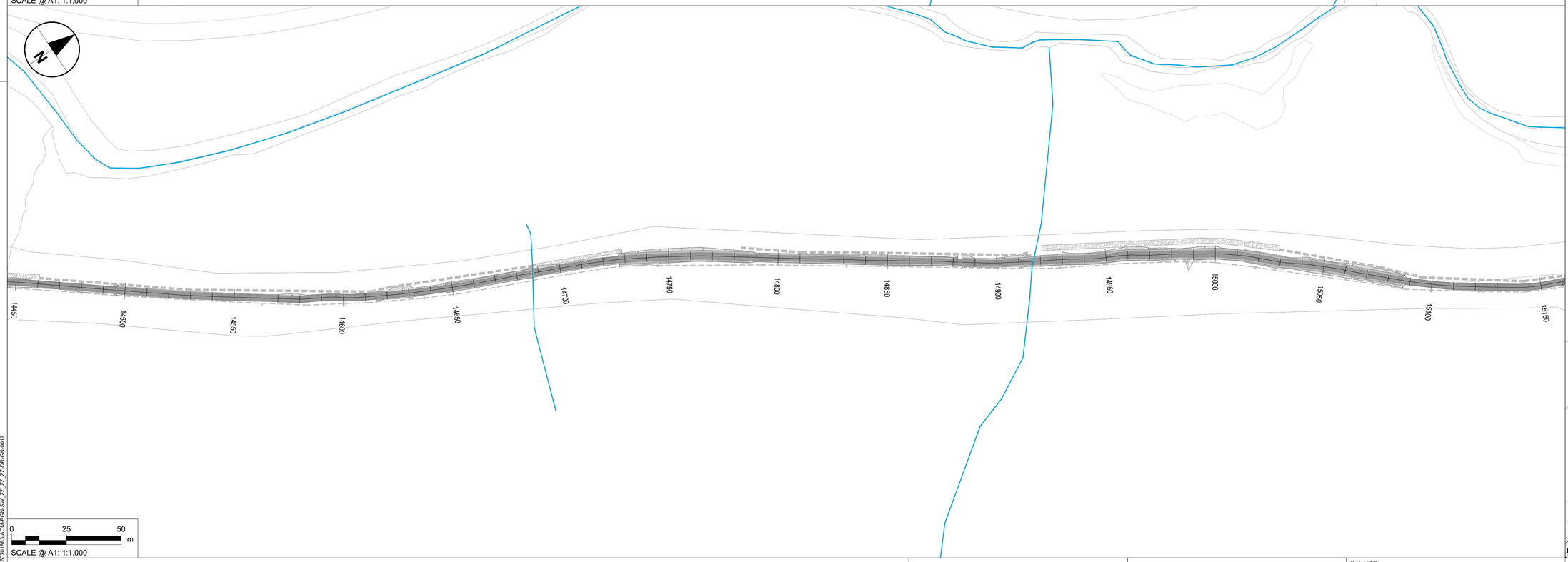

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KEY

- WATERCOURSE
- SAC

PHASE 1

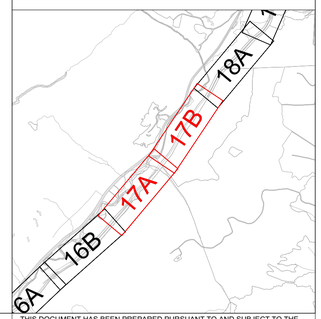
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Plot Date: 27 March 2026 16:33:23
File Name: C:\Drawings\60-ACOM_DS06_EIUD\01730906\60701883-ACM-EGN-SW_ZZ_ZZ-DR-GN-0017

Purpose of issue

FOR INFORMATION

	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02

REVISION DETAILS

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 15

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

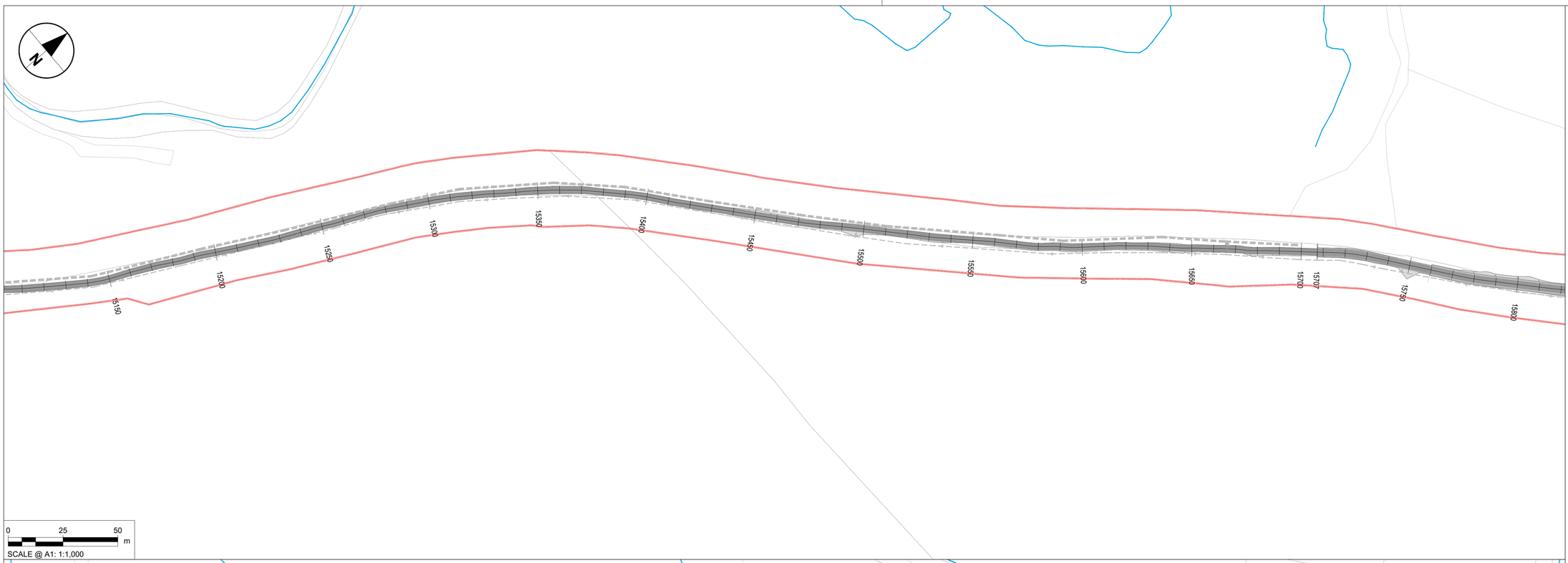
Internal Project No.	Suitability
60701883	S2

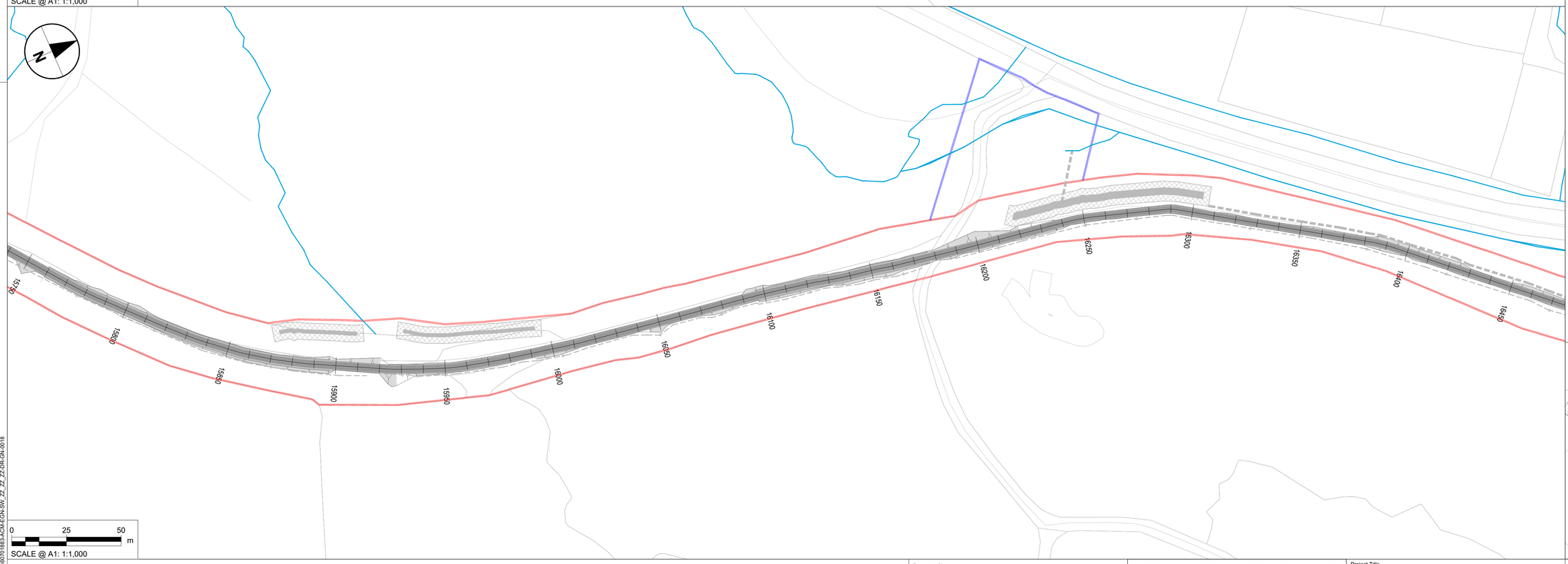
Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number
60701883	ACM	EGN	SW_ZZ_ZZ_ZZ	DR	GN	0017

Rev: P02





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KEY

- WATERCOURSE
- SAC

PHASE 1

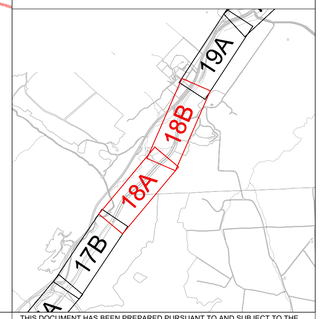
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Plot Date: 27 March 2026 16:35:29
File Name: C:\Project\60701883-AECOM_DS06_EU\0017\3090\60701883-ACM-EGN-SW_ZZ_ZZ-DR-GN-0018

Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 16

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No. 60701883

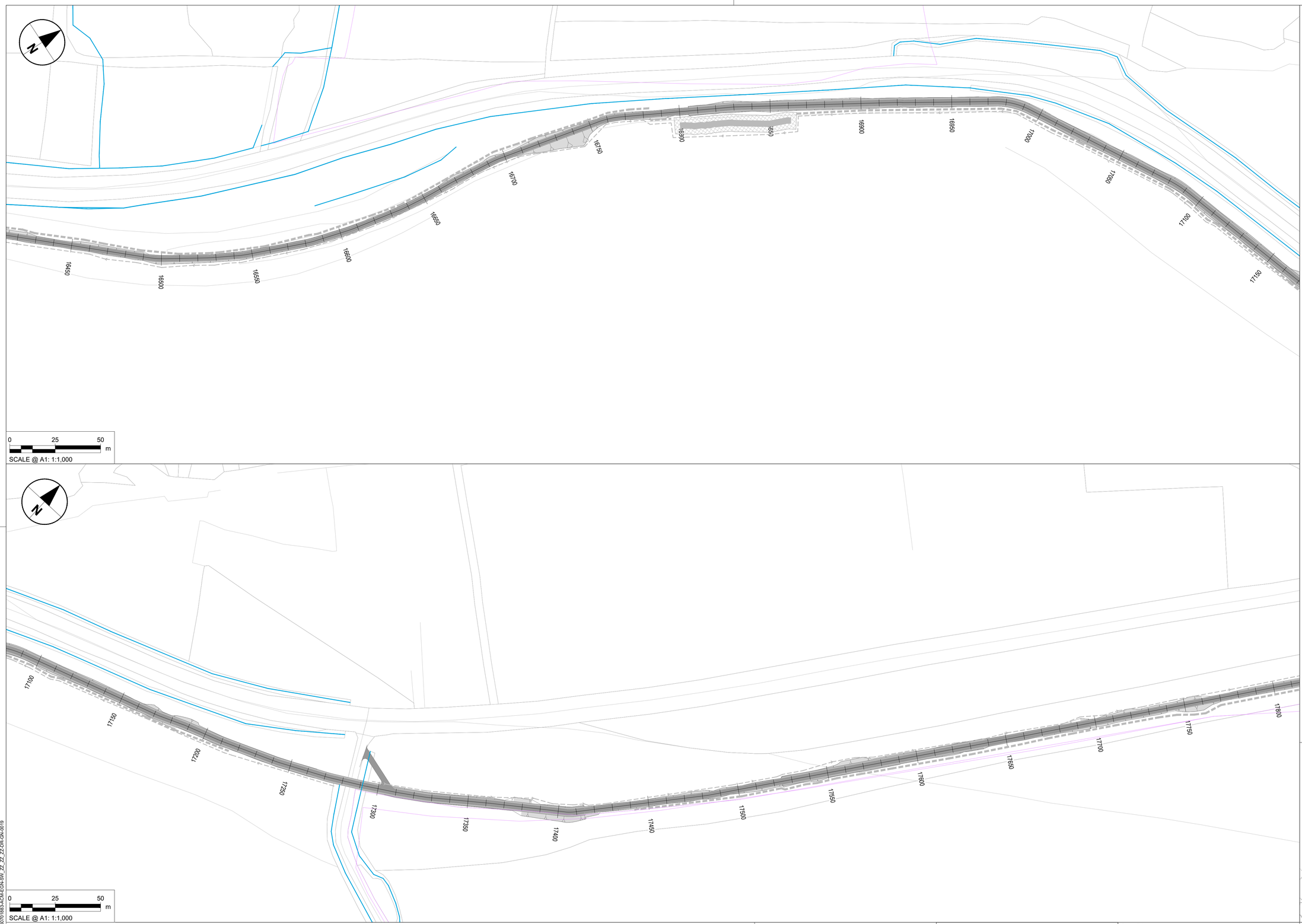
Suitability S2

Scale @ A1 1:2500

Volume General

Drawing Number
Aecom Project ID 60701883 | Originator -ACM | Volume -EGN - | Location SW_ZZ_ZZ_ZZ | Type -DR | Role -GN | Number -0018

Rev P02



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3. DRAWING IS BASED ON OS MAPPING.
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   - 4.2. UAV SURVEY DATA PROVIDED BY IO GEOMATICS ON 21/10/2024.
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KEY

- WATERCOURSE
- SAC

PHASE 1

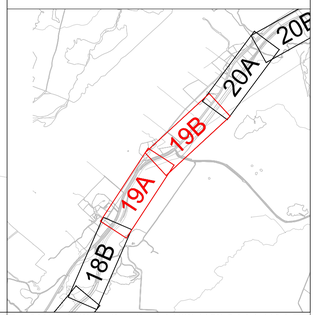
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

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Purpose of issue

FOR INFORMATION

	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02
REVISION DETAILS				

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 17

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID: 60701883 | Originator: -ACM | Volume: -EGN - | Location: SW_ZZ_ZZ_ZZ | Type: -DR | Role: -GN | Number: -0019

Rev: P02

Plot Date: 27 March 2026, 19:45:57
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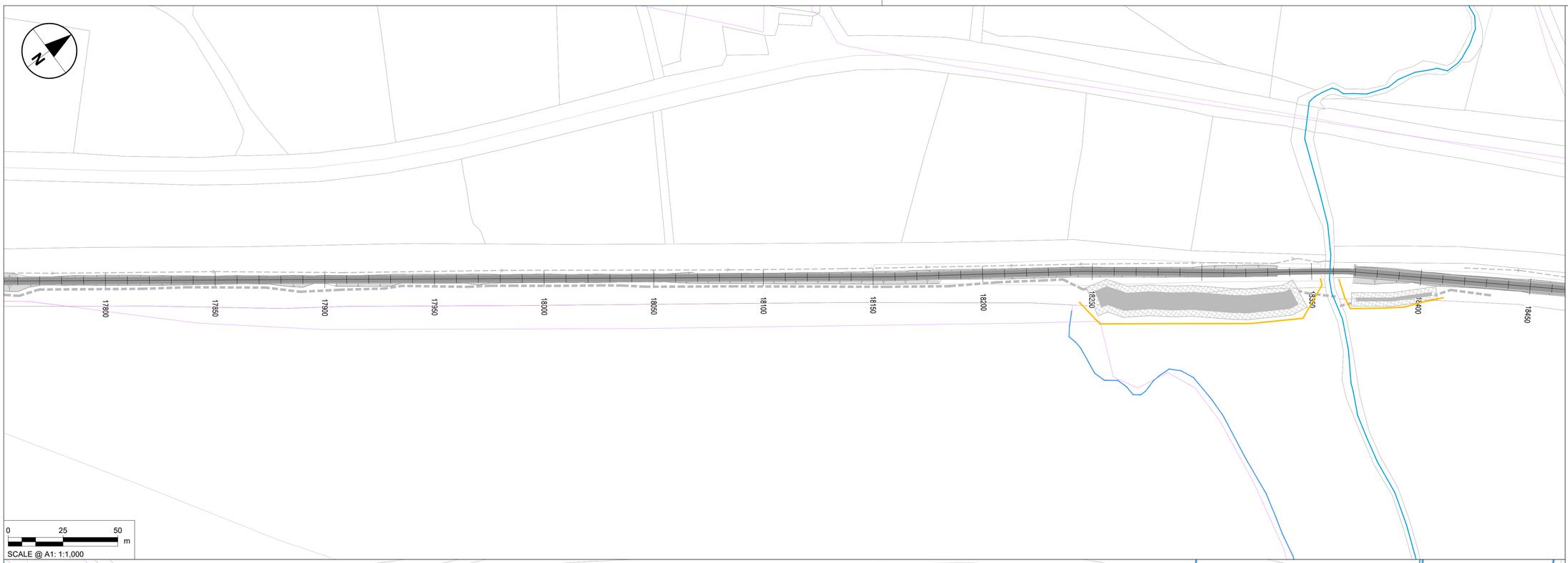

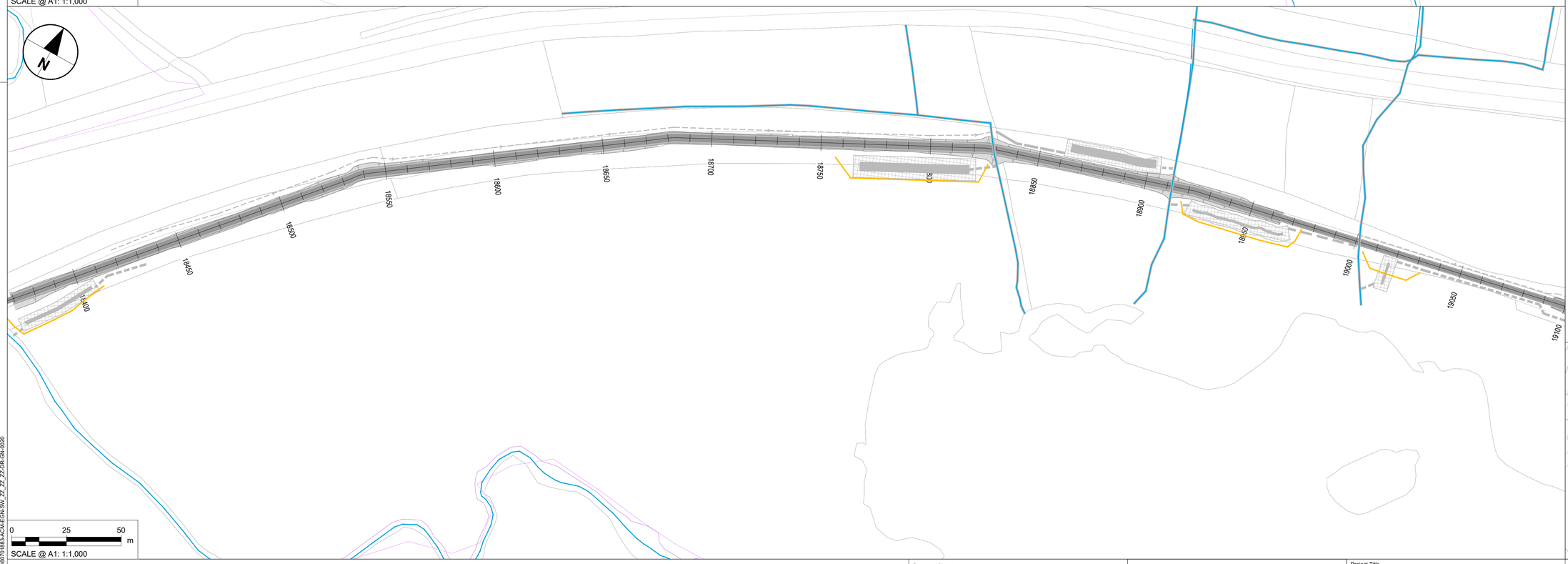

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KEY

- WATERCOURSE
- SAC

PHASE 1

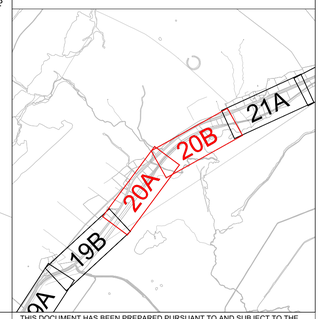
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithre Náisiúnta Dhún na nGall

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Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 18

Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Rev
60701883	-ACM	-EGN -	P02
SW_ZZ_ZZ_ZZ	-DR	-GN-0020	
Location	Type	Role / Number	

Plot Date: 27 March 2026, 16:22:20
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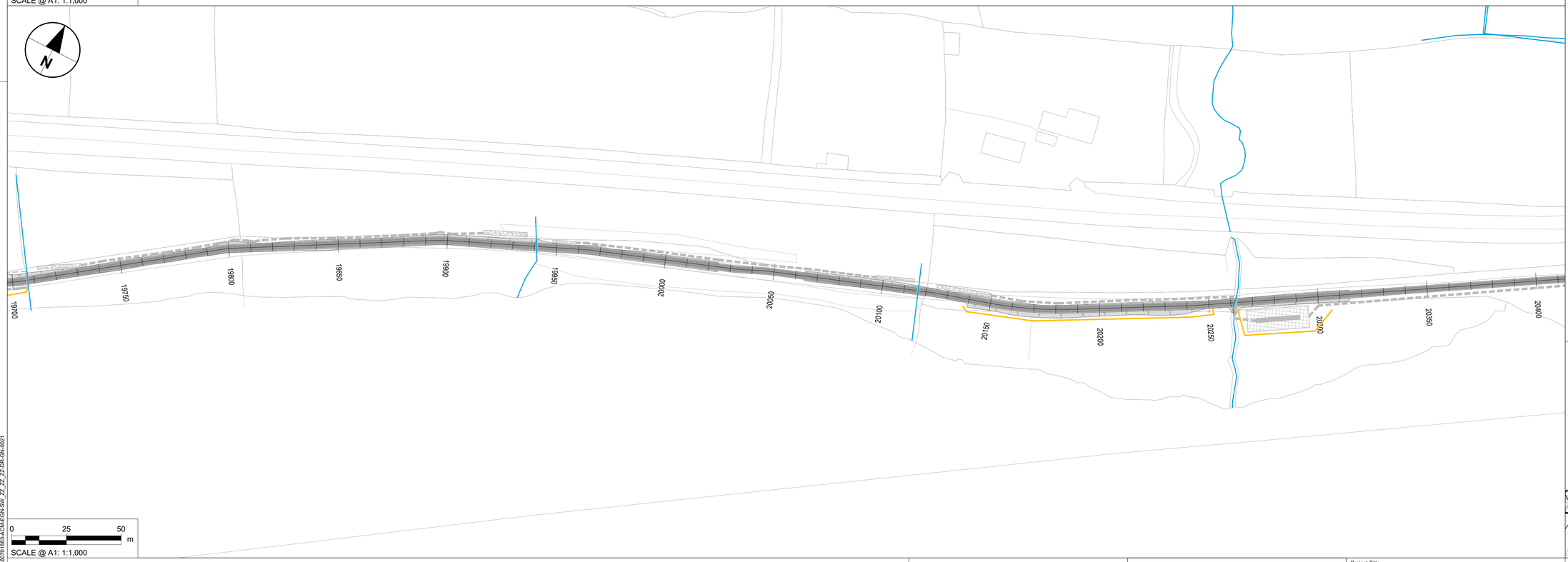

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KEY

- WATERCOURSE
- SAC

PHASE 1

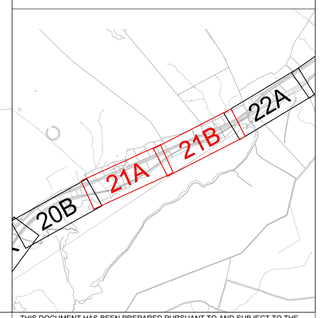
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boichte Naisiúnta Dhún na nGall

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Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02
REVISION DETAILS				

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 19

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number	Rev
60701883	-ACM	-EGN -	SW_ZZ_ZZ_ZZ	-DR	-GN	-0021	P02

Plot Date: 27 March 2026 16:06:39
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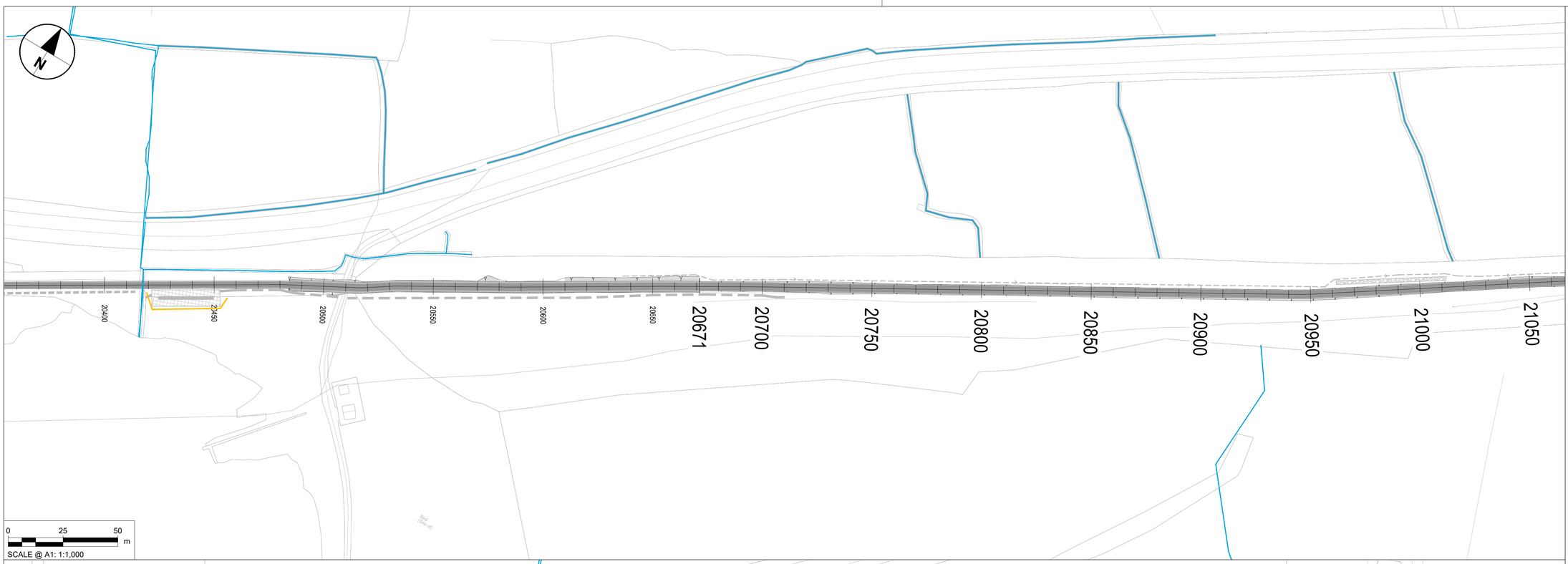

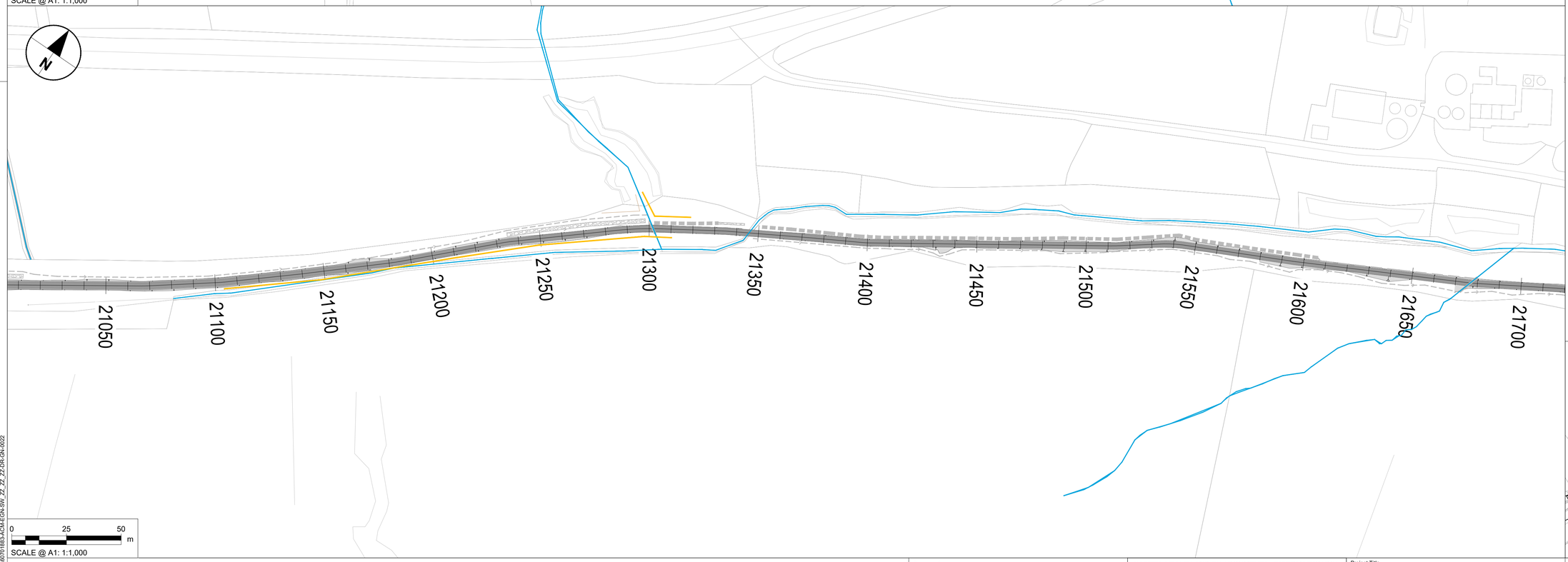

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KEY

- WATERCOURSE
- SAC

PHASE 1

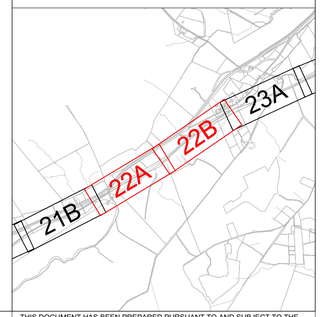
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

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Plot Date: 27 March 2026, 17:00:41
File Name: C:\PROWORKS\AECOM_DS06_EU\60170390\60701883-ACM-EGN-SW_ZZ_ZZ_DR-GN-0022

Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 20

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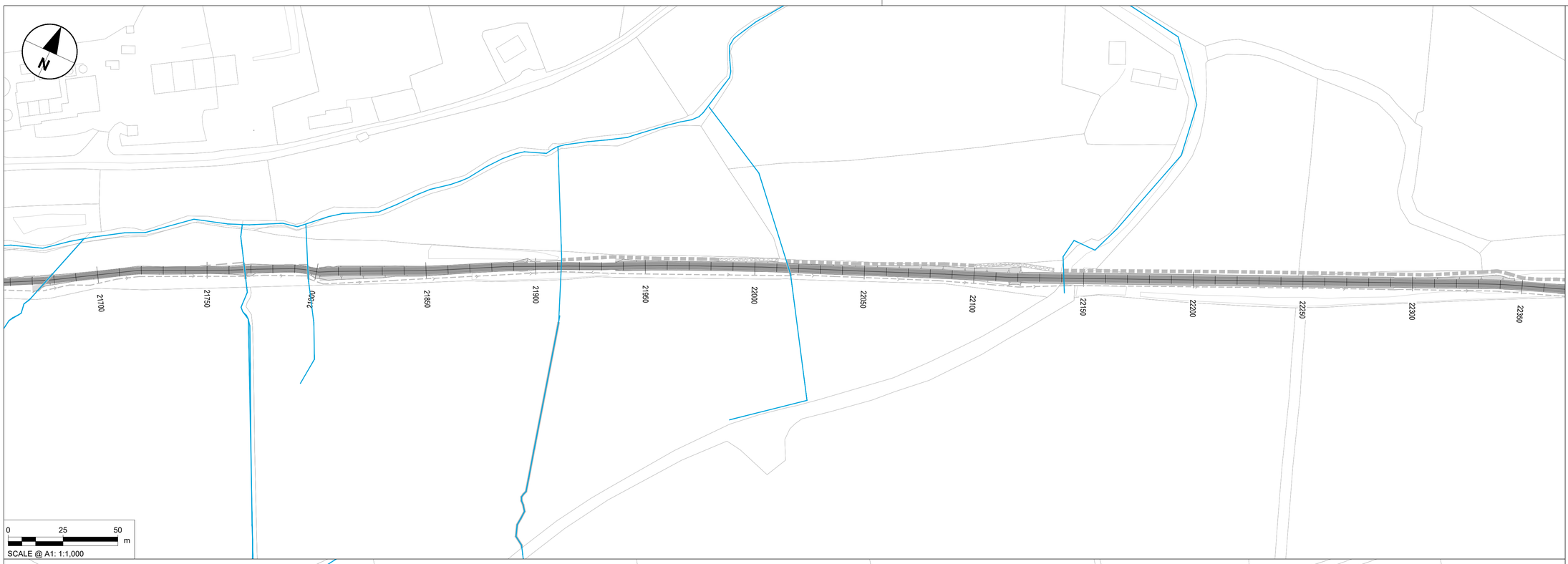
Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number	Rev
60701883	-ACM	-EGN -	SW_ZZ_ZZ_ZZ	-DR	-GN	-0022	P02



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KEY

- WATERCOURSE
- SAC

PHASE 1

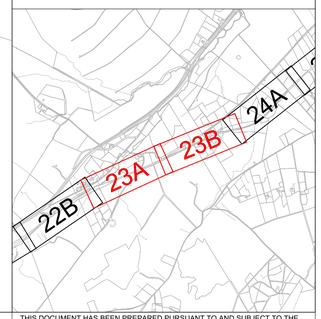
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 21

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number				Rev
Aecom Project ID	Originator	Volume		
60701883	-ACM	-EGN -		P02
SW_ZZ_ZZ_ZZ	-DR	-GN-0023		
Location	Type	Role	Number	

Plot Date: 27 March 2026 17:04:00
File Name: C:\PWworking\AECOM_DS06_EU0017309\60701883\ACM-EGN-SW_ZZ_ZZ-DR-GN-0023

NOTES

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KEY

- WATERCOURSE
- SAC

PHASE 1

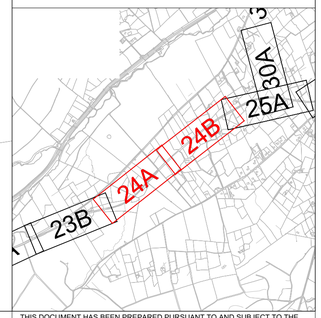
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



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Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithre Náisiúnta Dhún na nGall

Greenway

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Plot Date: 27 March 2026, 17:07:26
File Name: C:\Work\Rod\AECOM_DS06_EU\60173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0024

Purpose of issue

FOR INFORMATION

	By	Check	Date	Suffix
Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02

REVISION DETAILS

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 22

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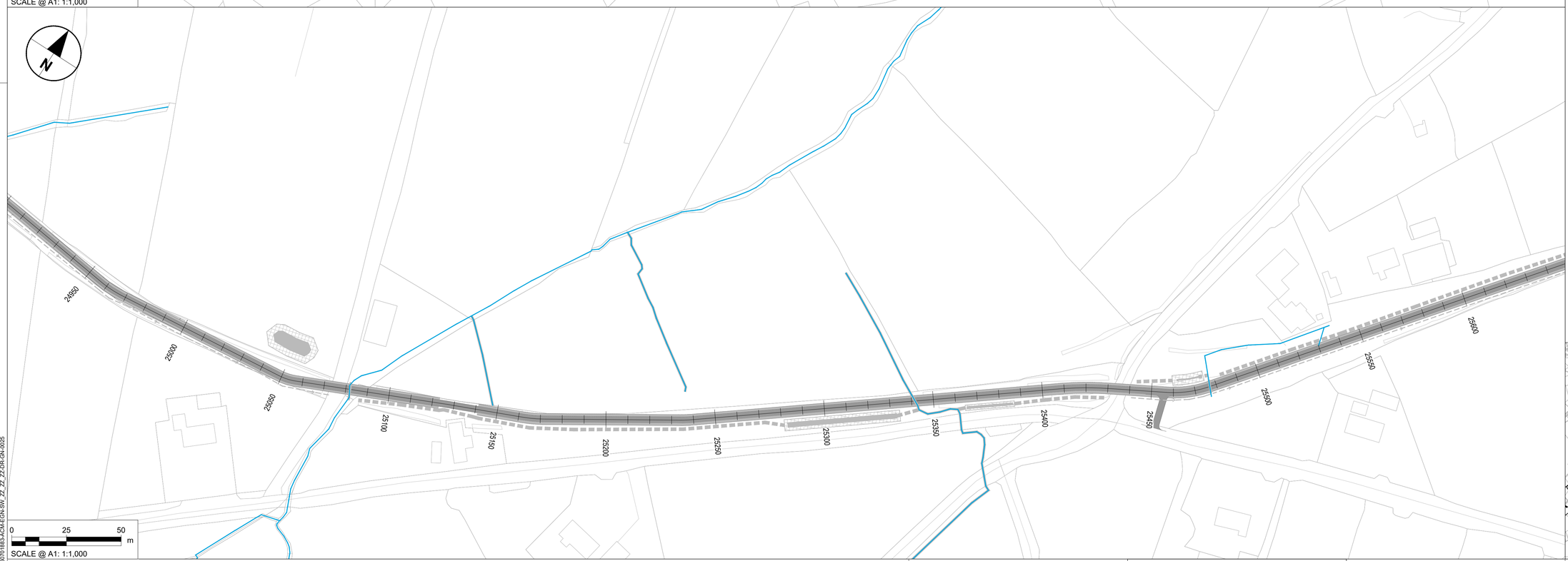
Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID: 60701883 | Originator: -ACM | Volume: -EGN -
SW_ZZ_ZZ_ZZ -DR -GN-0024
Location | Type | Role | Number

Rev: P02



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KEY

- WATERCOURSE
- SAC

PHASE 1

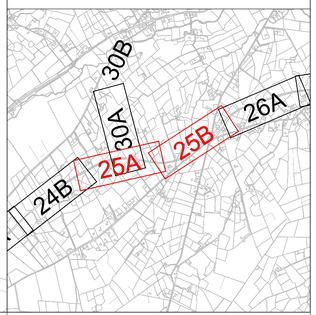
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithne Naisiúnta Dhún na nGall

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Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 23

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID: 60701883 | Originator: -ACM | Volume: -EGN - | Location: SW_ZZ_ZZ_ZZ | Type: -DR | Role: -GN | Number: -0025

Rev: P02

Plot Date: 27 March 2026, 17:10:37
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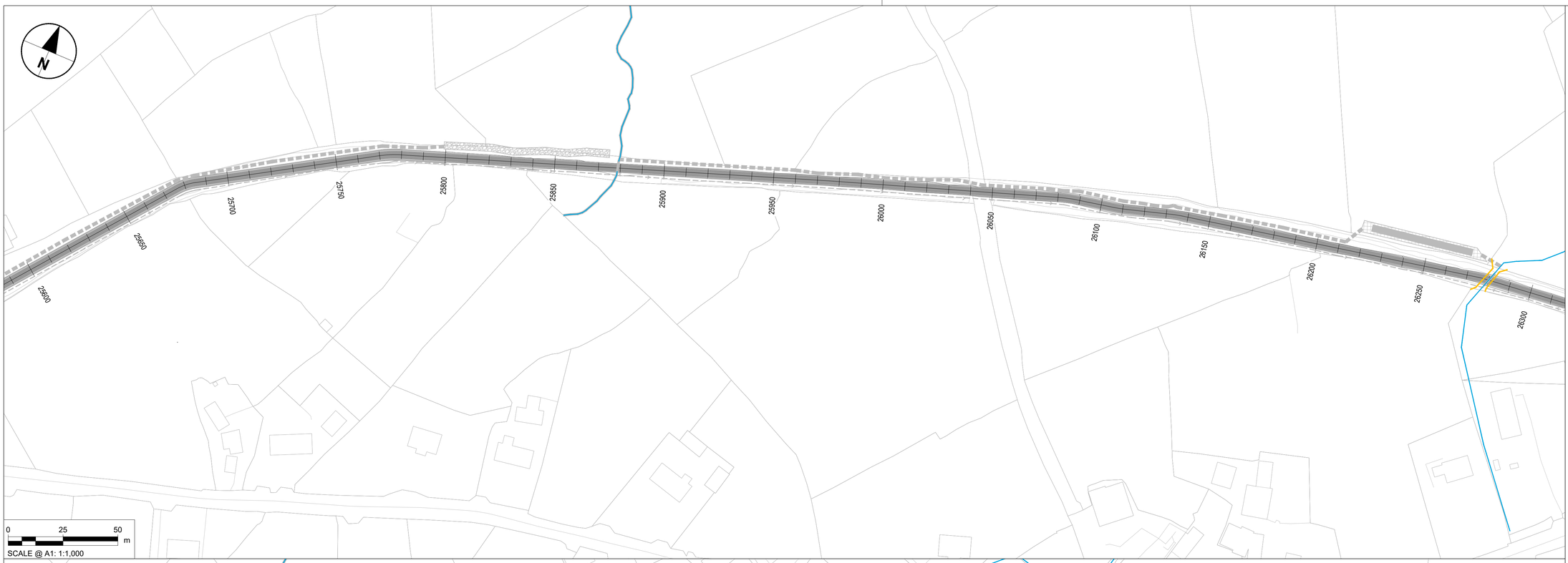

NOTES

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3. DRAWING IS BASED ON OS MAPPING.
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KEY

- WATERCOURSE
- SAC

PHASE 1

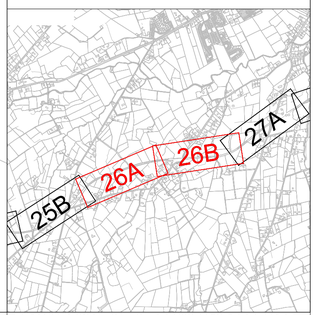
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithne Naisiúnta Dhún na nGall

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Plot Date: 27 March 2026 17:14:13
File Name: C:\Drawings\60701883-ACM_DS06_EIUD01730900\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0026

Purpose of issue

FOR INFORMATION

REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 24

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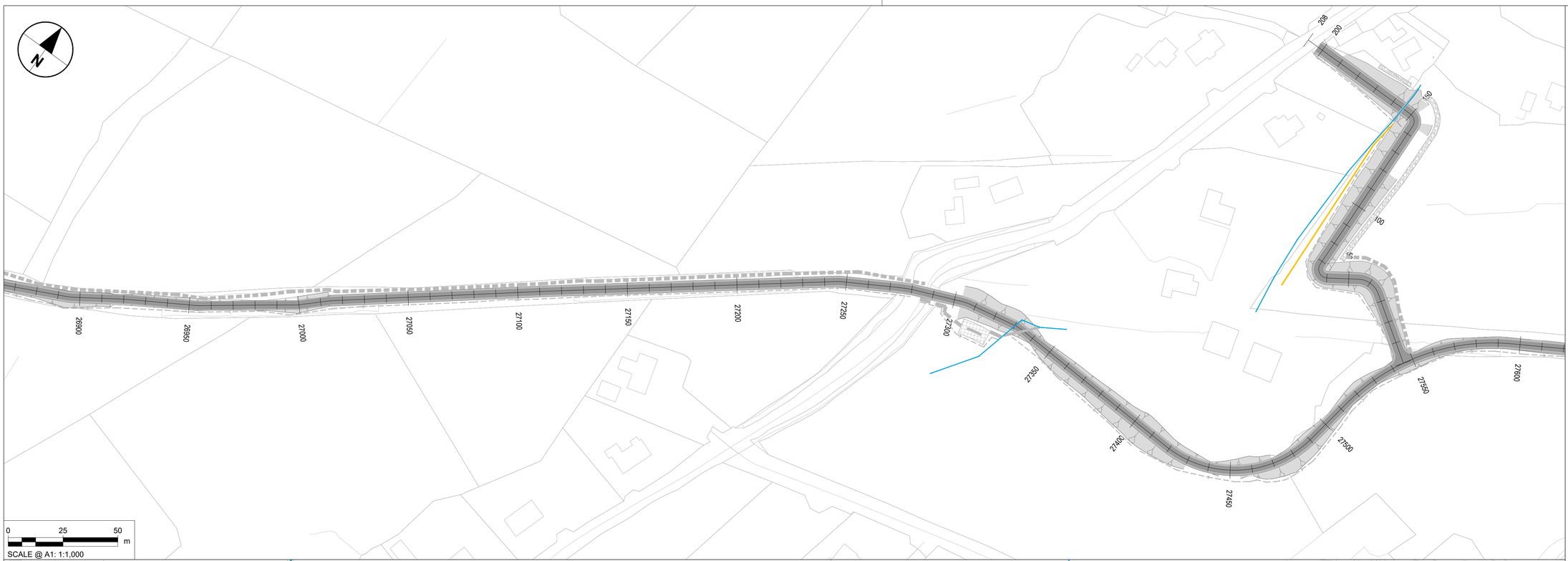
Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID I Originator I Volume I Type I Role I Number Location
60701883 -ACM -EGN - SW_ZZ_ZZ_ZZ -DR -GN-0026

Rev: P02



NOTES

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KEY

- WATERCOURSE
- SAC

PHASE 1

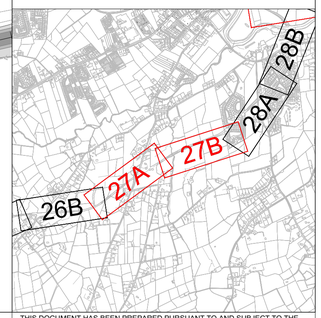
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

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REVISION DETAILS	By / Check	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 25

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Rev
60701883	-ACM	-EGN -	P02
SW_ZZ_ZZ_ZZ	-DR	-GN-0027	
Location	Type	Role / Number	

Plot Date: 27 March 2026 17:17:30
File Name: C:\Drawings\60ACOM_DS\IL_EU\0173090\60701883-ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0027

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KEY

- WATERCOURSE
- SAC

PHASE 1

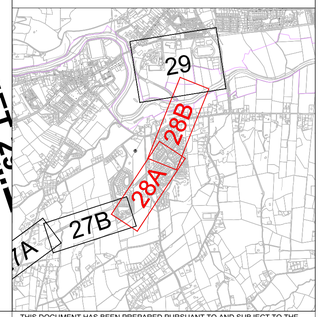
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

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Initial Revision	IL	DK	27/03/26	P01
	IL	DK	27/03/26	P02
REVISION DETAILS				

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
RIVER FINN

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Designed	Drawn	Checked	Approved	Date
---	IL	IL	DK	27/03/26

Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID 60701883 - Originator ACM - Volume EGN - Location SW_ZZ_ZZ_ZZ - Type DR - Role GN - Number 0028

Rev P02

Plot Date: 27 March 2026, 17:19:58
File Name: C:\WWSBRNCAECOM_DS06_EU\0017309\60701883\ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0028

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KEY

- WATERCOURSE
- SAC

PHASE 1

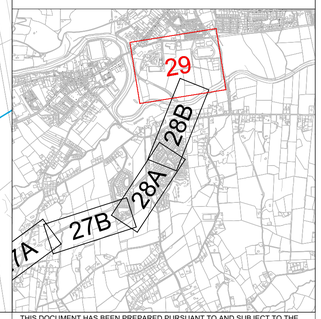
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

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Plot Date: 27 March 2026, 17:23:23
File Name: C:\Work\ROD\AECOM_DS06_EU\0173090\60701883\ACM-EGN-SW_ZZ_ZZ_ZZ-DR-GN-0029

Purpose of issue

FOR INFORMATION

	By	Date	Suffix
Initial Revision	IL / DK	27/03/26	P01
	IL / DK	27/03/26	P02

REVISION DETAILS

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION BOX

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 26

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Designed	Drawn	Checked	Approved	Date
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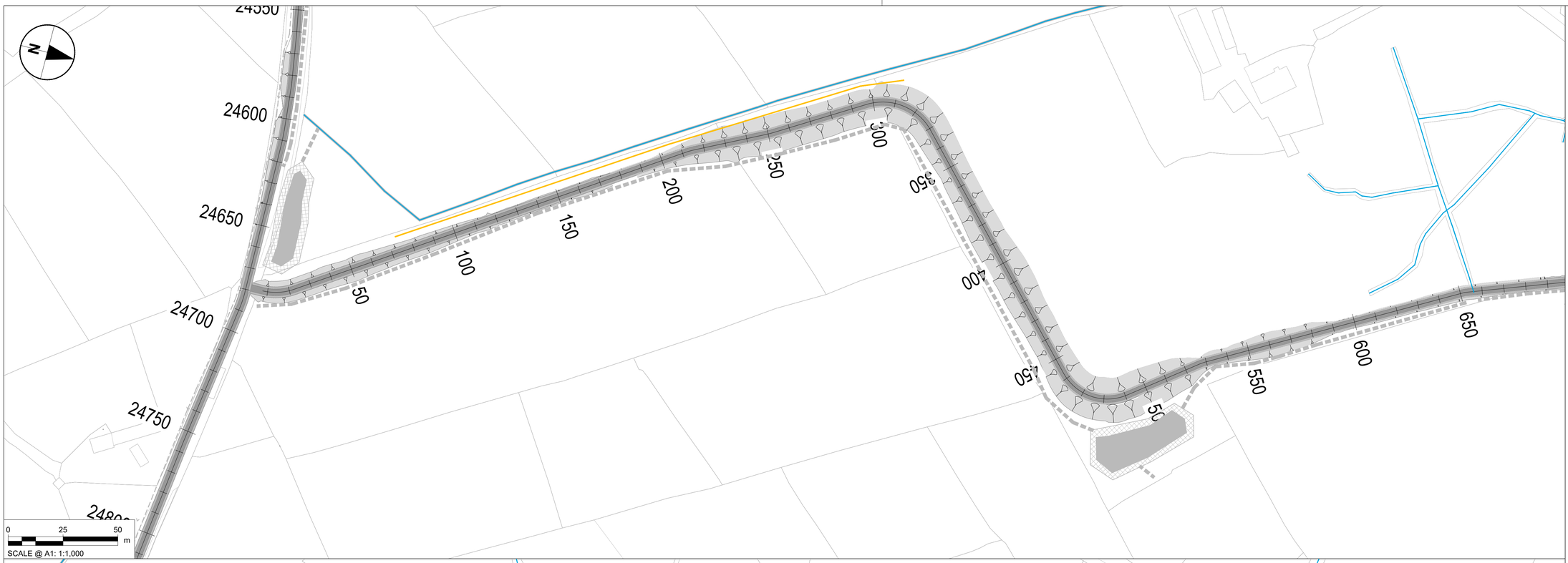
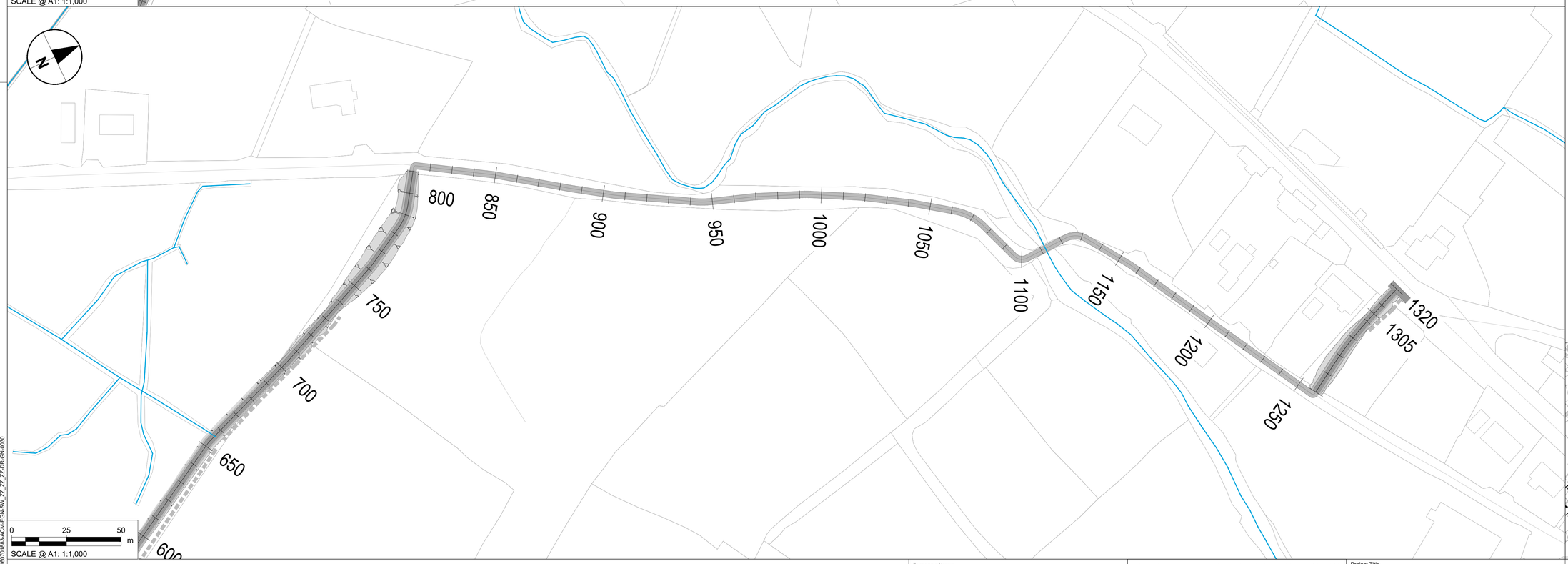
Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number
Aecom Project ID | Originator | Volume
60701883 -ACM -EGN -
SW_ZZ_ZZ_ZZ -DR -GN-0029
Location | Type | Role | Number

Rev: P02





NOTES

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KEY

- WATERCOURSE
- SAC

PHASE 1

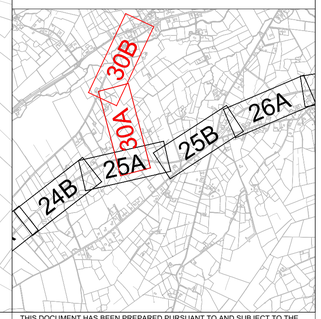
- TRIPLE SILT FENCE

PHASE 2

- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



Tionscadal Éireann Project Ireland 2040

Bonneagar Iompair Éireann Transport Infrastructure Ireland

Comhairle Contae Dhún na nGall Donegal County Council

Donegal NRO Oifig Boithne Náisiúnta Dhún na nGall

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Project Title

Barnesmore Gap Greenway

Drawing Title

CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 27

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Internal Project No.	Suitability
60701883	S2

Scale @ A1	Volume
1:2500	General

Drawing Number

Aecom Project ID	Originator	Volume	Location	Type	Role	Number	Rev
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Plot Date: 27 March 2026 17:27:44
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KEY

- WATERCOURSE
- SAC

PHASE 1

- TRIPLE SILT FENCE

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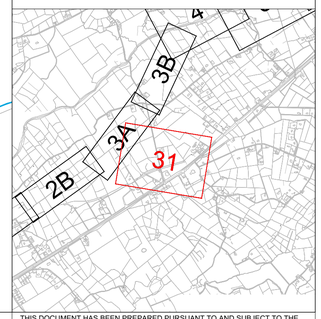
- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT POND

PHASE 3

- 6" PUMP BUNDED
- DEWATERING SUMP
- ABUTMENT BASE WITH STEPPED EXCAVATION ON 3 SIDES AND CONCRETE CUT OFF WALL
- PIPED WATERCOURSE



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CEMP
EROSION & SEDIMENT CONTROL MEASURES
FIGURE 28

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Aecom Project ID	Originator	Volume	Location	Type	Role	Number	Rev
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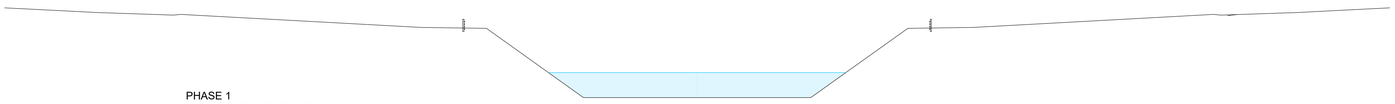
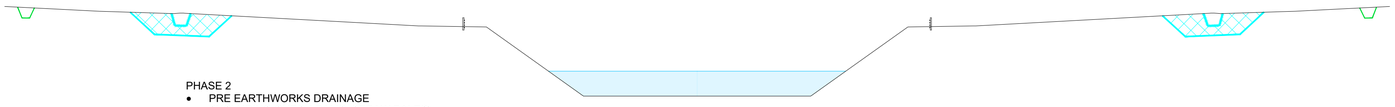
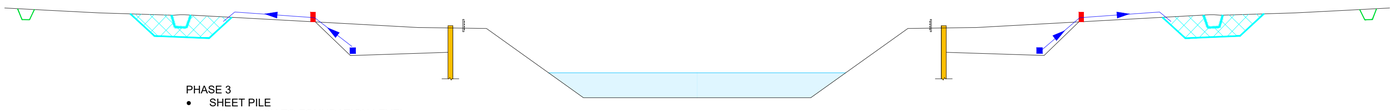


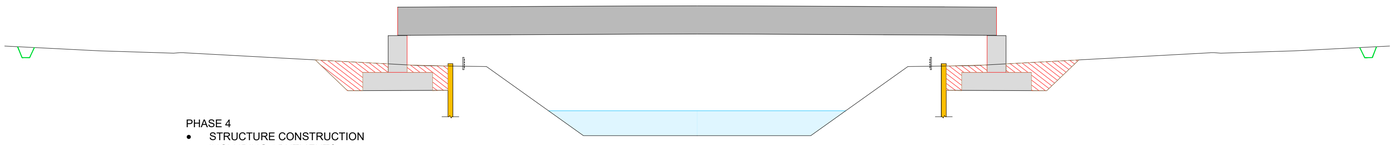
PHASE 1
- TRIPLE SILT FENCE



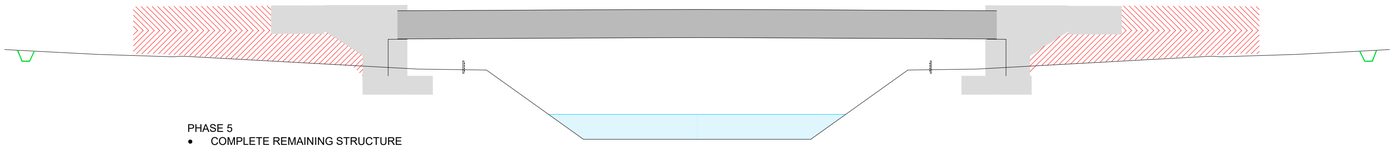
PHASE 2
- PRE EARTHWORKS DRAINAGE (INCLUDING CHECK DAMS, STRAW BALES)
- INTERCEPTOR DITCH (INCLUDING CHECK DAMS, STRAW BALES)
- SETTLEMENT PONDS



PHASE 3
- SHEET PILE
- EXCAVATION TO FOUNDATION LEVEL
- DEWATERING SUMP AND PUMP



PHASE 4
- STRUCTURE CONSTRUCTION INCLUDING ABUTMENTS, DIAPHRAGMS, WINGWALLS AND DECK
- BACKFILL TO EXISTING GROUND LEVEL



PHASE 5
- COMPLETE REMAINING STRUCTURE ELEMENTS AND BACKFILL ABUTMENTS
- FINALISE EARTHWORKS

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- 6" PUMP BUNDED
- DEWATERING SUMP

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Rev: P01

Appendix B

Schedule of Environmental Commitments

Barnesmore Gap Greenway

Appendix 4.1B: Schedule of Environmental Commitments

Donegal County Council

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1. Schedule of Environmental Commitments

1.1 Introduction

This chapter of the Environmental Impact Assessment Report (EIAR) presents a summary of the mitigation and monitoring measures which shall be implemented during the construction and operational phase of the proposed Barnesmore Gap Greenway project (the 'proposed development' hereafter). Mitigation measures are the measures proposed in order to avoid, reduce or, where possible, remedy the negative environmental effects of a proposed development. This chapter reiterates the mitigation measures set out in Chapters 4 – 19 of this Environmental Impact Assessment Report for the proposed Barnesmore Gap Greenway.

This chapter also deals only with mitigation measures to be applied to the proposed development which go beyond 'mitigation by design', i.e. the inherent features of the design of the proposed development or construction methodology which also mitigate adverse environmental effects. 'Mitigation by design' is regarded as part of the development as proposed (and assessed) and is not the subject of this chapter.

An Environmental Operating Plan (EOP) for the proposed development has also been prepared in accordance with the NRA (2007) Guidelines on the Creation, Implementation and Maintenance of an Environmental Operating Plan, available as Appendix D of this EIAR. The EOP contains all of the mitigation measures as detailed in this EIAR and also the NIS. The contractor will be required to take ownership of the EOP and implement the measures outlined. The contractor will set out their approach to managing environmental issues associated with the construction of the Proposed Scheme and for delivering on the mitigation measures. During the operational and maintenance phase, Donegal County Council (DCC) will implement the mitigation measures outlined under 'Operational Phase Mitigation' as part of their operational controls and procedures. These include measures relating to, inter alia, maintenance of landscaping, noise barriers etc.

1.2 General Mitigation and Monitoring Measures

The table below details the general mitigation and monitoring measures identified in Chapter 04, Description of the Proposed Development.

Table 1-1 - General Mitigation and Monitoring Measures

No.	Description
Mitigation Measures – Construction Phase	
1.1	Construction works will be limited to standard working hours as set out below: • 08:00 - 18:00 Monday to Friday, with reduced hours on Saturday (08:00-14:00). Site closure on Sundays and public holidays. 24-hour working will be required for the construction of the three underpasses under the N15/N56 national roads. Each underpass location will require 1-2 weekends where construction activities take place outside of normal working hours (24 hours a day) while the national road is closed. No construction works are permitted on Sundays or Bank Holidays (without the written permission of the relevant Authority).
1.2	A preliminary Construction Environmental Management Plan (hereinafter referred to as CEMP) is available in Volume 4 of this EIAR. It has been prepared by ROD-AECOM in conjunction with DCC. It presents the approach and application of environmental management and mitigation for the construction of the proposed development. Prior to any demolition, excavation or construction, a Construction Environmental Management Plan (CEMP) will be produced by the successful contractor. The CEMP will set out the Contractor's methodology in relation to the overall management and administration of the construction project. It will be prepared by the Contractor during the pre-construction phase to ensure commitments included in the

No.	Description
	statutory approvals are adhered to and that it integrates the requirements of the CEMP, Environmental Operating Plan (EOP) and the Resource Waste Management Plan (RWMP). The Contractor will be required to include details under the following headings: 1) Details of working hours and days. 2) Details of emergency plan - in the event of fire, chemical spillage, cement spillage, collapse of structures, failure of equipment or road traffic incident within an area of traffic management. The plan must include contact names and telephone numbers for: Local Authority (all sections/departments); Ambulance; Gardaí and Fire Services. 3) Details of chemical/fuel storage areas (including location and bunding to contain runoff of spillages and leakages). 4) Details of construction plant storage, temporary offices and WC facilities. 5) Traffic management plan (to be developed in conjunction with the Local Authority Roads Section) including details of routing of network traffic; temporary road closures; temporary signal strategy; routing of construction traffic; programme of vehicular arrivals; on-site parking for vehicles and workers; road cleaning and other traffic management requirements. 6) Truck wheel wash details (including measures to reduce and treat runoff). 7) Dust management to prevent nuisance (during demolition & construction). 8) Site run-off management. 9) Noise and vibration management to prevent nuisance (demolition & construction). 10) Landscape management. 11) Management of demolition of all structures and assessment of risks for same. 12) Management of stockpiles. 13) Minimisation of artificial lighting and shading. 14) Management of risk from invasive alien species. 15) Management of waste arising from construction and demolition. 16) Project procedures and method statements for: a) Demolition and removal of infrastructure (including risk assessment and disposal). b) Diversion of services. c) Excavation (through soils & bedrock). d) Piling. e) Temporary hoarding & lighting. f) Location of crushing plant. g) Disposal of surplus geological material (soils, rock etc.). h) Earthworks material improvement. i) Protection of watercourses from contamination and silting during construction. 17) Temporary construction zones. 18) Environmental constraints and commitments. 19) Monitoring, inspection and auditing of the Contractor's compliance with his/her environmental commitments. 20) Training for site staff regarding environmental constraints. The production of the CEMP will also set out measures or practices that will be out in place to ensure health and safety is maintained, and any environmental constraints are during the construction phase. Adoption of good management practices on-site during the construction and operation phases will also contribute to reducing environmental impacts. Prior to the Construction Environmental Management Plan being accepted and implemented, it shall be submitted to both the NPWS and IFI to ensure that all requirements of those bodies are satisfied. The CEMP is a preliminary document, which will be updated and finalised by the successful Contractor. Appended to the preliminary CEMP are the following constituent plans, also to be finalised by the Contractor: Appendix B: Schedule of Environmental Commitments Appendix C: An Coimisiún Pleanála approval including any conditions / modifications Appendix D: Environmental Operating Plan Appendix E: Resource Waste Management Plan Appendix F: Incident Response Plan Appendix G: Invasive Species Management Plan

No.	Description
	Appendix H: Construction Traffic Management Plan Each of these plans are discussed in the following sections. The obligation to develop, maintain and implement the CEMP and all of the above-listed plans will form part of the contract documents for the construction phase.
1.3	The CEMP document in its current form will be finalised by the successful Contractor prior to the commencement of the construction phase of the proposed development.
1.4	A Schedule of Environmental Commitments from the EIAR and the NIS has been included as Appendix B to the preliminary CEMP in Volume 4 of this EIAR.
1.5	An Environmental Operating Plan (EOP) is a project management tool and has been prepared as Appendix D to the preliminary CEMP in Volume 4 of this EIAR. It outlines procedures for the delivery of environmental mitigation measures and for addressing general day-to-day environmental issues that can arise during the construction phase of developments. The EOP, will be further developed and adopted by the Contractor during the project construction stage. Before any works commence on site, the Contractor(s) will be required to prepare an EOP in accordance with the TII/National Roads Authority (NRA) Guidelines for the Creation and Maintenance of an Environmental Operating Plan. The EOP will set out the Contractor's approach to managing environmental issues associated with the construction of the scheme and provide a documented account of the implementation of the environmental commitments set out in the EIAR and measures stipulated in the planning conditions. Details within the plan will include: 1) All environmental commitments and mitigation measures included as part of the planning approval process and any requirements of statutory bodies such as the NPWS and IFI as well as a method documenting compliance with the measures. 2) A list of all applicable environmental legislation requirements and a method of documenting compliance with these requirements. 3) Outline methods by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment. To oversee the implementation of the EOP, the Contractor will be required to appoint a suitably competent Site Environmental Manager (SEM) to ensure that the mitigation measures included in the EIAR, the EOP and the statutory approvals are executed in the construction of the works and to monitor that that mitigation measures employed are functioning properly.
1.6	A Resource Waste Management Plan (RWMP) is included as Appendix E to the CEMP in Volume 4 of this EIAR. It sets out the Contractor's proposals regarding the treatment, storage and disposal of waste. The plan will be a live document that will be amended and updated to reflect current conditions on-site as the project progresses. The obligation to develop, maintain and operate a RWMP will form part of the contract documents for the project. The RWMP will include details such as: 1) Details of waste storage to be provided for different waste types on site. 2) Details of where and how materials are to be disposed of - landfill or other appropriately licensed waste management facility. 3) Details of storage areas on site for waste materials and containers. 4) Details of how unsuitable excess materials will be disposed of where necessary. Details of how and where hazardous wastes such as oils, diesel and other hydrocarbon or other chemical waste are to be stored and disposed of in a suitable manner.
1.7	The Incident Response Plan (IRP) is included as Appendix F to the CEMP in Volume 4 of this EIAR. It describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts during the construction stage of the proposed development are prompt, efficient, and appropriate to particular circumstances. The Contractor will finalise the IRP prior to the commencement of the proposed works to include the following information, at a minimum: • Contact names and telephone numbers for the local authority, i.e. DCC (all sections and departments), An Garda Síochána and ambulance and fire services. • Method statements for weather forecasting and continuous monitoring of water levels in the River Eske and River Finn. The plan must outline how the Contractor will respond to forecasted flood events, including but not limited to, details of removal of site materials, fuels, tools, vehicles and persons from flood zones. • The measures to be taken to avoid or reduce the incident risk potential. • Reference to the method statement and management plans for construction activities, insofar as they are relevant for the purposes of mitigating against health and safety and pollution incidents.

No.	Description
	• Procedures to be adopted to contain, limit and mitigate any adverse effects, as far as reasonably practicable, in the event of a health and safety or pollution incident. • Persons responsible for dealing with incidents and their contact details. • Procedures for alerting key staff, appropriate emergency services, authorities, the Employer's Representative and clean-up companies, where required, and contact details of same. • Procedures for notifying relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers of pollution incidents, where required, and contact details of same. • Standby / rota systems. The types and location of emergency response equipment available and appropriate personal protective equipment to be worn.

1.3 Mitigation and Monitoring Measures for Traffic and Transportation

The table below details the mitigation and monitoring measures identified in Chapter 05, Traffic and Transportation.

Table 1-2 - Mitigation and Monitoring Measures relating to Traffic and Transportation

No.	Description
Mitigation Measures – Construction Phase	
2.1	The successful contractor shall prepare a comprehensive Construction Traffic Management Plan (CTMP) in consultation with Donegal County Council, TII, and An Garda Síochána before the commencement of the construction phase. The plan will be developed based on the outline CTMP provided in Appendix 4.1 of Volume 4 of this EIAR. The CTMP will be reviewed throughout the construction phase and revised on a needs basis as works progress. The purpose of such a plan is to outline the measures which will be employed to manage the expected construction traffic during the construction period. It will detail how facilities for existing road users will be maintained whilst construction operations are proceeding. The CTMP will ensure the safe movement of pedestrians and cyclists around the work areas, including pedestrians with mobility impairments.
2.2	A dedicated, suitably qualified and experienced Traffic Management Coordinator will be appointed for the duration of the project. The Traffic Management Coordinator shall be competent in temporary traffic management for works on public roads, with appropriate training, qualifications and experience, and shall have sufficient authority to effectively plan, implement, monitor and adjust traffic management arrangements in accordance with relevant legislation, standards and the requirements of the Roads Authority. This person will be the main point of contact for all matters relating to traffic management on the project.
2.3	Schedule of Construction Traffic - HGV deliveries will be scheduled so as not to coincide with the peak periods on the local road network.
2.4	Roads to Be Used and Not Used - The CTMP will clearly identify those roads that will be used to access this project and those roads that are not to be used. In some cases, An Garda Síochána and the roads authority may direct/agree that certain roads cannot be used for laden HGV's but can be used for LGV's or unladen HGV's.
2.5	Road Pre-and Post-Construction Condition Survey - A pre-condition survey will be carried out on all public roads that will be used in connection with the works to record the condition of the road before the works commence. A post construction survey will also be carried out after the works are completed.
2.6	Road Reinstatement - Upon completion of the construction works all roads will be reinstated to their pre-works condition or better and to the satisfaction of the relevant road's authority. If during the construction works, some of the roads used in connection with the development are damaged then these roads will be made good to the satisfaction of the road's authority.
2.7	Site Inductions - All workers will receive a comprehensive site induction which will include, as appropriate, a section on traffic management and clear guidance on the routes to be used/not used.

No.	Description
2.8	24 Hour Emergency Phone Number - A 24-hour emergency phone number will be maintained for the duration of the construction works and the number will be noted on temporary signage at each site compound.
2.9	Orderly Traffic Management - All necessary temporary traffic management will be planned and executed in accordance with best practice, including Chapter 8 of the Traffic Signs Manual as published by the TII/Department of Transport.
2.10	Tracked excavators will be moved to and from the site on low-loaders and will not be permitted to drive on the street pavements.
2.11	The contractor is to arrange for staff parking within the site extents. Contractors', Subcontractors' or Suppliers' vehicles or staff vehicles, or any vehicles associated with the works are not permitted to park, idle or queue on the public road network.
2.12	Wheel washers / judder bars will be placed at all site access points to minimise the migration of detritus onto the public roads. The roads will be inspected and cleaned on a regular basis.
2.13	All haul vehicles transporting loose construction-related materials, including excavated soil, stone, crushed rock, aggregates, spoil or similar materials, to or from the site shall be appropriately covered after loading to ensure there is no risk of material falling onto the public road
2.14	Water bowsers will be deployed within the sites during periods of hot weather to damp down potential dust generation from unbound surfaces.
2.15	An Application for an Abnormal Load Permit will be made to the relevant Local Authority in advance of any abnormal loads exceeding the thresholds laid out in the Road Traffic (Construction and Use of Vehicles) Regulations 2003. Where possible, abnormal load movements will be restricted to evening or nighttime to minimise disruption to local traffic and traffic on strategic routes.
Mitigation Measures - Operational Phase	
2.16	Monitoring of the proposed development, once it is operational, is recommended to determine the actual trip generation. This monitoring shall include classified vehicular turning movement counts at all site access points during the weekday AM and PM peak periods, together with a minimum seven-day automatic traffic count survey to capture daily and weekly traffic patterns. Where relevant, pedestrian and cyclist movements at site access points shall also be recorded. Monitoring shall be carried out once the development has reached a stable operational state, typically within three to six months of becoming operational, with a further follow-up survey at approximately 12 months. The results shall be compared with the trip generation assumptions contained within the Transport Assessment and submitted to the Roads Authority for review.

1.4 Mitigation and Monitoring Measures for Population and Human Health

The table below details the mitigation and monitoring measures identified in Chapter 06, Population and Human Health.

Table 1-3 - Mitigation and Monitoring Measures relating to Population and Human Health

No.	Description
Mitigation Measures – Construction Phase	
3.1	A Construction Traffic Management Plan (CTMP) will be required to be developed and implemented by the Contractor to address all modes of transport during the construction stage and will be agreed with DCC prior to the commencement of the construction phase. a) The CTMP will be required to maximise the safety of the workforce and the public and to minimise traffic delays, disruption and maintain access to properties. b) The CTMP will also address temporary disruption to traffic signals, footpath access and the management of pedestrian crossing points, temporary disruption to rail traffic. It will also address the provision of appropriate temporary signage to direct road users to alternative car parking arrangements.

No.	Description
	The CTMP will also ensure Road surfaces in proximity to the construction site are to be kept clear of mud and debris as much as is possible.
Mitigation Measures – Operational Phase	
3.2	The proposed development will likely result in a net positive effect on population and human health; therefore, no mitigation or monitoring is required.

1.5 Mitigation and Monitoring Measures for Biodiversity

The table below details the mitigation and monitoring measures identified in Chapter 07, Biodiversity.

Table 1-4 - Mitigation and Monitoring Measures relating to Biodiversity

No.	Description
Mitigation Measures – Construction Phase	
4.1	The Contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this Chapter are implemented during the construction phase. The ECoW must possess training, experience and knowledge appropriate to the role, including: • An NFQ Level 8 qualification or equivalent or other acceptable qualification in an ecological discipline; and, • Demonstrable appropriate practical experience as an ECoW in the protection of European sites.
4.2	Prior to any site clearance, excavation, or construction, a Construction Environmental Management Plan (CEMP) will be produced by the successful contractor(s). The CEMP will set out the Contractor's overall management and administration of the construction phase. The CEMP will be developed by the Contractor during the pre-construction phase, to ensure commitments included in the statutory approvals are implemented.
4.3	In order to prevent pollution of surface water during the construction of the proposed development, which could potentially give rise to negative effects on biodiversity and freshwater habitats, all of the mitigation measures contained in the EIAR Chapters 9 (Hydrology) and 14 (Landscape and Visual Amenity) shall be implemented.
4.4	The Contractor will prepare a site-specific Method Statement detailing how the works will be carried out. The Site Foreperson shall read, sign and abide by each site-specific Method Statement. A 'toolbox talk' will be conducted by the ECoW to induct the Works Team on the ecological considerations listed in the site-specific Method Statement by the Site Foreperson.
4.5	The Contractor will appoint a Site Environmental Manager (SEM) prior to the commencement of works. This person shall be responsible for carrying out environmental monitoring of the works and ensuring that the mitigation measures proposed in this report (as well as the CEMP and site-specific Method Statements) are adhered to.
4.6	Construction is limited to the hours of 08:00-18:00 Monday to Friday with reduced hours on Saturday (08.00 – 14.00) and that the site will be closed on Sundays and during public holidays. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of Donegal County Council. Works shall not be permitted on Sundays or Bank Holidays. Standard construction hours being limited to daylight hours reduces impacts associated with noise, lighting and vibration during the hours when mammals are typically active and foraging.
4.7.	Temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with '*BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations'* (BSI, 2012).
4.7	The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the Environmental Clerk of Works (ECoW) in consultation with the Arboriculturist. Existing land boundaries will be retained. Where minor vegetation removal within

No.	Description
	hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction.
4.8	All surface water runoff will be directed to existing watercourses. Where existing drains are not available, new shallow v-ditches will be constructed which will convey surface water to the nearest watercourse. No new outfalls will be constructed in the River Eske, as described in Section 7.10.3.2 of Chapter 07 of this EIAR. Attenuation will be provided at the trailheads which will ensure that surface water runoff does not exceed greenfield runoff rates.
4.9	During construction, the following guidance documents for construction work on, over or near water will be adhered to: • C532 Control of water pollution from construction sites: guidance for consultants and contractors (CIRIA, 2001) • Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers. • CIRIA C648 Control of water pollution from linear construction projects: technical guidance (CIRIA, 2006) • Construction, Replacement or Alteration of Bridges and Culverts: A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945 (OPW, 2019) • Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2005c) • Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016) • Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board)
4.10	Where construction is located within 50m of a watercourse the Contractor shall: Prior to commencement of works the contractor shall prepare a site-specific work plan work plan that includes: • Drawings of planned works, machinery access corridors of corridors, haul roads, delivery areas, concrete batching and wash out areas and wheel wash areas, environmental constraints and mitigation measures to address such; • A method statement; • An emergency response plan in case of accidental spillages; • The ECoW and the SEM will approve the site-specific work plan.
4.11	In relation to hydrocarbons and other chemicals, the following mitigation measures will be applied: • All vehicles and plant shall be refuelled off-site, where possible. • All fuelling of machinery shall be undertaken on an impermeable base in bunded areas at least 50m from the edge of the river. • All fuelling equipment shall be regularly inspected and serviced. • Any petrol- or diesel-fuelled pumps or other machinery shall be located within temporary bunded units. • All fuel, oils, chemicals, hydraulic fluids, on-site toilets etc. shall be stored in access-controlled areas on the construction site compound, on an impermeable base which shall be bunded to 110% capacity, appropriately secured and shall be located away from drains, watercourses or other sensitive areas. • All plant and construction vehicles shall be inspected daily for oil leaks and a full-service record shall be kept for all plant and machinery. • Maintenance and repairs shall be undertaken on an impermeable surface located at least 50m from a waterbody, drain or ditch, • All construction plant (pumps, compressors, generators etc) shall be provided with adequately sized spill trays. • Spill kits shall be available on-site. • Spill kits shall be provided at all refuelling points and fuel/chemical storage areas. • Staff shall be trained in the use of spill skits and spill kits. • All soils contaminated by spills shall be treated on-site. Where this is not feasible contaminated soils will be removed to a suitably licenced disposal facility. • All waste oils, empty oil containers and hazardous wastes shall be disposed of in accordance with the Waste Management Act, 1996 (as amended).

No.	Description
4.12	In relation to site access and vehicle movements, the following mitigation measures will be applied: • Temporary haul roads shall be constructed between earthworks and the river. • The subgrade of haul roads shall be prepared by light compaction. A geotextile underlay shall be installed. • A 100-200mm deep granular surface shall be provided at haul roads. • A 2-3% cross fall shall be provided away from the river. Swales shall be provided to direct runoff from haul roads away from the river to settlement cells. • Clean water diversions (swales or interceptor ditches shall be provided upslope of excavated areas to divert flows around excavated surfaces to prevent run-on. • A continuous perimeter bund shall be provided at the downslope edge of excavated areas. • Wheel wash areas shall be located near the site exit on an impermeable surface. • All vehicles shall pass through wheel wash area before exiting the site. • The wheel wash area bunds and settlement tanks shall be inspected daily and repaired as required. • Sludge from settlement tanks shall be periodically removed and disposed of at an appropriately licensed facility. • All fuelling of machinery shall be undertaken on an impermeable base in a bunded area at least 50m from the edge of the river. • All fuels, oils, hydraulic fluids and construction chemical shall be stored be stored in access-controlled areas. • Fuel and chemical storage areas shall have bunded impermeable base and shall be located away from drains, watercourses or other sensitive areas. • Spill kits shall be provided at all refuelling points and fuel/chemical storage areas. • All fuelling equipment shall be regularly inspected and serviced. • All construction plant (pumps, compressors, generators etc) shall be provided with adequately sized spill trays. • All plant and construction vehicles shall be inspected daily for oil, fuel and hydraulic fluid leaks and a full-service record shall be kept for all plant and machinery. • Maintenance and repairs of plant & and vehicles shall be undertaken on an impermeable surface located at least 50m from a watercourse, drain or ditch. • The works area (including site compounds) will be limited to the minimum required to undertake the necessary elements of the proposed development.
4.13	In relation to concrete works, the following mitigation measures will be applied: The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which has a deleterious effect on water chemistry and aquatic habitats and species. As the use of concrete cannot be avoided, the following control measures will be employed: • Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used to promote the early set of concrete surfaces exposed to water. • When working near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used. • Any plant operating close to the water or water-dependent habitat such as bogs will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near surface waters and bogs. • Placing of concrete near watercourses will be carried out only under the supervision of the Ecological Clerk of Works (ECoW). • The weather forecast will be consulted prior to commencing concrete pours. No such works will be undertaken if inclement weather is forecast such that precipitation may make it difficult to maintain a dry working area. • There will be no spills of concrete, cement, grout or similar materials hosed into surface water drains. Such spills shall be contained immediately, and runoff prevented from entering watercourses. • Concrete waste and wash-down water will be contained and managed on site to prevent pollution of all surface watercourses. • On-site concrete batching and mixing activities will only be allowed at the identified construction compound areas.

No.	Description
	• Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the manufacturer). • Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival to site. • All concrete washout shall occur at designated washout areas on bunded impermeable surfaces. • Concrete washout areas shall be located at least 50m from a watercourse, ditch, drain or sensitive habitat. • Concrete washout areas shall be inspected daily for leaks and overflows. • Chute washout locations will be provided with a suitably sized, contained impermeable area. This area can be a portable skip or lined excavation. The contents of the cement washout area will be disposed of offsite in accordance with the Contractor's Waste Management Plan. • Hardened concrete waste will be removed and disposed of at an appropriately licenced facility.
4.14	In relation to sedimentation and surface water runoff, the following mitigation measures will be applied: • Where earthworks are required within 30m of a waterbody, such as at the various watercourse crossings, areas in proximity to watercourses not being crossed, adjacent to Lough Eske and adjacent to Lough Mourne, the following erosion, sedimentation and drainage controls shall be adopted: • Prior to earthworks commencing, all ditches and drains shall be temporarily culverted to avoid movement of vehicles across watercourses. • Riparian vegetation will be fenced to a minimum distance of 10m from the river's edge. • Where riparian vegetation within 10 m of a rivers edge must be impacted, adequate protection of soils shall be provided using a biodegradable geotextile staked into the ground using wooden pegs until vegetation re-establishes. • Areas of bank reinstatement shall be covered with hessian to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back. Where it is not possible to reinstate vegetation, efforts shall be made in surrounding areas to offset removal through improvement. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031 includes planting which will compensate for minor loss of vegetation. • A geotextile silt fence shall be installed continuously along the downslope perimeter of all disturbed areas adjacent to a watercourse, extending for the full length where soil disturbance occurs. • The upslope area for fence segments shall not exceed 0.1 hectares. • Silt fences shall be anchored by excavating a 150mm wide by 150mm deep trench. The geotextile shall be placed in the trench, and the trench shall be backfilled and compacted to prevent underflow. • Silt fences shall be supported by wooden or steel posts at a maximum of 2m intervals. • The minimum embedment for silt fence posts shall be 450mm. • The geotextile fabric shall be attached to the posts by stapes or steel wire on the upslope side. • The height of the silt fence shall be a minimum of 600mm. • J-hooks will be provided at 30 – 50m intervals. A sediment ponding area will be provided behind each J-hook. • Silt fences shall be inspected daily and after storms. Runs of sagging fence shall be tensioned and the silt fence re-anchored as required. • Silt fences will be cleaned when sediment height reaches 1/3 height of the fence. • Sections of the silt fence that are damaged shall be replaced immediately. • Coir logs/strawbales shall be installed in concentrated flow paths and temporary sandbag, or rock check dams shall be constructed at outfalls. • Surface water flowing onto the construction area will be minimised through the provision of berms, diversion channels or cut-off ditches. • Protection of waterbodies and bogs from silt load will be carried out through the use of gully silt/sediment filters and shallow berms in hardstanding areas to provide adequate treatment of runoff to watercourses. • Settlement tanks/ponds, silt traps/bags and bunds will be used. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap.

No.	Description
	• Where works are adjacent to waterbodies and water dependent habitats (e.g. bogs), silt fences will be installed around the works boundary to contain any potential silt or sediment run-off. • Compound/storage facilities will be fenced off at a minimum distance of 5m from the top of the edge of the watercourse banks and bogs. Any works within the 10m buffer zone will require measures, such as silt fences, to be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to any watercourse or water dependent habitat. • The construction discharge will be treated such that it will not reduce the environmental quality standard of the receiving watercourses.
4.15	The following mitigation • Sacrificial grips shall be installed to direct runoff to settlement cells prior to treatment/discharge. • Silt fences shall be provided on the stream side of stockpiles at downslope boundaries. • The silt fence shall be set back from the toe by at least 6 m to maintain a ponding/clean-out zone. • Stockpile heights and slope faces shall be greater than or equal to 3 to 1 on faces to minimise the runoff footprint, • Continuous sediment barriers shall be provided around the downslope perimeter using silt fences or gravel bags) • Non-active stockpiles shall be with secured with waterproof woven geotextile covers. These shall cover exposed faces entirely and a minimum of 300mm overlap for seams shall be provided, • Stockpile covers shall be anchored or weighted against wind, • Turbid runoff shall be routed to a settling area (temporary lagoon/tank or vegetated filter strip) before any controlled discharge.
4.16	Repair and repointing of existing masonry structures over water will be carried out on S12 only, due to the presence of a known bat roost in the masonry arch barrel. All other masonry structures over watercourses will be repaired and upgraded using the concrete saddling method, as described Section 4.5.7.9 of Chapter 4 of this EIAR. The following mitigation measures specific to masonry repair and repointing over water at S12 will be adhered to: • A Section 46/47 Permit under the Foyle Fisheries Act, 1952, for the disturbance of the riverbed habitat, is required in advance of any instream works associated with the masonry repair and repointing works to S12. • All concrete repair and repointing will be undertaken by hand, using hand-held tools. • Only one bucket of mortar will be brought to the works area at any time. • A mobile catch-net or platform will be used beneath the deck and along the banks abutments as required to prevent masonry, wet concrete, removed vegetation or other materials falling into the channel, • The catch-net/ platform and positioning will be approved by the ECoW. • Masonry repair and repointing at height will be carried out using ladder, MEWP, Underbridge Unit or scaffolding. • A site-specific risk assessment shall be undertaken in consultation with the Loughs Agency prior to undertaking repairs to the bridge (S12) over the Mourne Beg River. • The risk assessments shall the determine the necessity for and nature of bio-security protocols to be adopted during the works. • The ECoW and the SEM will create a site-specific work plan for completing each bridge repair that details specific measures to be adopted to prevent water pollution and hydromorphological changes. • Working platforms over the water surface shall have a continuous surface and shall have no gaps. • Working platforms shall have a raised protective edge to prevent tools and equipment falling into the channel. • Where feasible cantilevered or suspended working platforms will be used in preference to scaffolding. • Impermeable, bunded concrete batching areas shall be located a minimum of 30m away from the waterbody. • Floating silt screens, coir logs or straw bales shall be installed downstream of the bridge prior to works commencing.

No.	Description
4.17	In relation to concrete saddling of Masonry Structures: • The proposed development includes the repair and maintenance of 6 No. existing masonry structures over watercourse, which were built to facilitate the abandoned railway. All masonry structures, with the exception of S12, will be repaired and upgraded using the concrete saddling method. The concrete saddling method is described in Section 4.5.7.9 of Chapter 4 of this EIAR. The purpose of the concrete saddling method is to avoid in-stream works to the watercourses, particularly in the River Eske at S01 due to the presence of Freshwater Pearl Mussel in the riverbed around the existing bridge piers. As such, general water quality mitigation measures, as described in Section 7.10.2.1 of Chapter 7 of this EIAR, will apply. • In addition to the water quality mitigation measures proposed above, where concrete saddling is proposed (i.e., S01, S08, S09, S16 and S18), a Terracurtain screen will be securely anchored to the inside of the working area and shall be installed for the full length of the works on both sides of the masonry bridges for dust suppression. No water will be used for dust suppression on the bridge to prevent water quality impacts associated with surface water runoff. An impermeable membrane will be laid against the soffit walls prior to the pouring of concrete during concrete saddling works. No suspended scaffolding or debris netting is required as all construction works will be undertaken within the footprint of the existing structure.
4.18	In relation to the construction of watercourse crossings (bridges): The proposed development includes the construction of four new river bridge crossings (S04, S06, S10 and S20). The mitigation measures presented above in relation to water quality protection will apply in all cases. Where bridge foundations are to be constructed, the following additional mitigation shall apply: • Clean water diversions (swales or interceptor ditches) shall be provided upslope of excavated areas to divert flows around excavated surfaces to prevent run-on. • A geotextile silt fence shall be installed continuously along the downslope perimeter of all disturbed areas adjacent to a watercourse, extending for the full length where soil disturbance occurs. • Excavations shall be dewatered by a sump pump and discharged to a settlement tank. • Straw bales, floating silt screens or coir logs shall be installed downstream of works. • Formwork for foundations shall have watertight joints. • Biodegradable shutter oils shall be used. • Suitable debris netting shall be provided beneath the deck and along the banks in front of the proposed new bridge abutments as required to prevent masonry or other materials falling into the channel.
4.19	Mitigation measures specific to the proposed River Eske Crossing (S04) will also apply as follows: • The new bridge over the River Eske has been designed as a clear span structure. • The piers are set back 5.8m on the north riverbank and 7.8m on the south riverbank. • The location of the bridge has been selected to avoid Annex I habitats and minimise the loss of seminatural habitats. • A site-specific risk assessment shall be undertaken in consultation with the National Parks and Wildlife Service and the Inland Fisheries Ireland the prior to installing bored pile foundations. • Steel plates or a compacted granular surface underlain by geotextile shall be installed as a drilling/crane platform drilling platforms and drill rig positioning areas. • Environmentally friendly drilling fluids shall be used in preference to Bentonite. • Drilling pumps and mud pumps shall be provided with a bunded, impermeable surface. • Pumps and hoses shall be inspected daily for leaks and repaired/replace as required. • Slurry management operations will be provided with a level, bunded, impermeable surface. • Permanent steel casings shall be installed at boreholes.
4.20	Mitigation measures in relation to culverts: There are 91 structures in total including bridges, culverts, underbridges and one overbridge. Ten culverts are subject to the Section 50 Consent process under the Arterial Drainage Act, 1945. The remaining culverts are small field drains and ditches and Section 50 permits for installing small pipe culverts are not required. For these small culverts, the bed of the ditch or drain will be cleared of vegetation and levelled and the pipe will be lowered into place to convey water under the greenway.

No.	Description
	The ten culverts that require a Section 50 permit will be constructed offline. Offline construction involves creating a new channel and redirecting the watercourse to the new channel once the culvert is completed. The process for constructing the offline culverts is as follow: • The installation of the ten culverts shall only take place during the period July to September unless otherwise agreed with Inland Fisheries Ireland or the Loughs Agency. • The offline culverts will be constructed in new channels. The new channels and culverts will be constructed in the dry. Once the new channels and culverts are completed, the existing watercourse will be diverted into the new channel and the former channel will be filled in. • The stream banks will have a slope of at least 1:5 and will be covered with topsoil and coir mats or similar to allow the area to revegetate and prevent erosion or the release of sediment into the stream while vegetation establishes. • Where the watercourse bed is composed of gravels, the new bed will be lined with stone and gravels in a like for like replacement. • When the watercourse is being diverted into the new channel, the downstream end will be opened first, allowing water to fill the channel slowly and prevent a surge of water which could lead to a sediment plume. • When the water levels in the new channel have stabilised, the upstream end of the new channel will be opened and the old channel will be closed. • Where there is a risk of sedimentation downstream of the culvert, a mat made of biodegradable material such as sedimat will be fitted at the downstream end of the new channel in accordance with the manufacturer's instructions. A straw bale is sufficient to contain sediment.
4.21	Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements.
4.22	Where lighting is required during construction, the lights will only illuminate work areas when necessary and will avoid illuminating any woodland habitats, trees, hedgerows and watercourses outside the required area. Directional lighting will be utilised to minimise light spill into surrounding habitats, including watercourses, treelines, and hedgerows.
4.23	KER 1: Woodlands: • In areas where there is a risk to tree root protection areas, such as north of the River Eske crossing in Ardnamona Wood, root protection measures, such as a cellular-confinement system, will be constructed in consultation with a qualified Arborist.
4.24	KER 2: Aquatic Ecosystems and Associated Aquatic Fauna: Fish: • Instream works, which are limited to the construction of ten culverts and masonry repointing to S12, will be undertaken between the months of July – September only, in accordance with Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016). • A Section 46/47 Permit under the Foyle Fisheries Act, 1952, for the disturbance of the riverbed habitat, is required in advance of any instream works associated with the masonry repair and repointing works to S12. Freshwater Pearl Mussel: • No instream works of any kind will take place on the existing bridge over the River Eske at Ch. 750 (S01). Concrete Saddling will be used on all masonry arches bridges over watercourses (with the exception of S12 for the reasons outlined in Section 7.10.3.8 of EIAR Chapter 07). • No instream works of any kind will take place at any location along the River Eske There will be no excavation of or cutting into the River Eske riverbank to facilitate the offline surface water drainage. No new outfalls will be constructed in the River Eske. Surface water runoff will be collected in shallow v-ditches that will end in a swale. Water will then percolate naturally into the soil, evaporate, or during heavy rainfall, flow through the riparian zone vegetation and into the river.
4.25	KER 3: Linear terrestrial babitats including the Abandoned Railway Line Ecological Corridor, Hedgerows and Treelines: • The landscape design, as presented in Chapter 14 and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031 includes widespread planting which will compensate for minor loss of linear habitats.

No.	Description
	• In areas where there is a risk to tree root protection areas, such as within the abandoned railway corridor south of Ballybofey/Stranorlar, root protection measures, such as a cellular-confinement system, will be constructed in consultation with a qualified Arborist.
4.26	KER 4: Upland Habitats: • The existing railway corridor is a linear corridor of removed vegetation. Therefore, the proposed development will require minor vegetation removal to allow for the 5m wide greenway. The habitat surveys did not identify any Annex I habitats designated as part of any European or Nationally designated site that will be impacted by the construction or operation of the proposed development. While there is overlap between the proposed development boundary and the Croaghonagh Bog SAC, the habitat that was recorded in this area was limited to Wet Heath habitat. The Croaghonagh Bog SAC is designated for Blanket Bog habitat only and as such, therefore will be no land-take of peatland habitat in this area as a result of the proposed development. • There is also overlap between the proposed development and the Barnesmore Bog NHA through the Barnesmore Gap. The habitat is limited to Wet Grassland (GS4) habitat. Therefore, there will be no land-take of designated Annex I peatland habitat in any Nationally designated site as a result of the proposed development. • The water quality mitigation measures outlined in Section 7.10.2.1 of Chapter 7 of this EIAR and the enhancement planting will provide adequate mitigation to protect against water quality impacts and habitat loss as part of construction. To avoid impacts on the Croaghonagh Bog SAC, and to avoid establishing a hydraulic gradient towards the drains from the bog, the filter drains between Ch. 17250 – 18200 will be positioned on the far side of the greenway surface to the bog, be no deeper than 1.5m and be wrapped in an impermeable membrane. This is to allow for surface water runoff only and not subsurface drainage or seepage from the bog.
4.27	KER 5: Otter: • A pre-construction survey will be undertaken by the Contractor's Ecologist two to three weeks prior to construction to ensure that no Otters have taken up residence within 150m of the proposed development. Should a holt or couch be found, the ECoW will seek direction from the NPWS and any necessary measures arising shall be completed prior to the commencement of works. Any additional mitigation measures prescribed following the preconstruction survey will comply with *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes* (TII, 2008b). Where potential holts are identified, a period of monitoring over several days may be required to determine whether holts are active, inactive or disused. If an active holt is discovered, the NPWS will be consulted before commencement of work to the watercourse. Otters do not tolerate disturbance at or near holts that are in active use. • Trenches and excavations will have ramps fitted to prevent fauna becoming trapped. • Where fencing is required, modified sheep-wire fencing will be used with a 10cm gap between the mesh and the ground. This will allow for the passage of mammals including Otter, while being restricted enough to prevent access by dogs and livestock.
4.28	KER 6: Badger: In addition to the construction phase and non-specific mitigation measures described above, the following mitigation measures will be implemented to ensure the protection of KER 6 Badger: • All works will be undertaken in accordance with '*Guidelines for the treatment of badgers prior to the construction of national road schemes'* (TII, 2005c). • A pre-construction survey will be carried out by the Contractor's Ecologist prior to the commencement of any works to search for signs of activity within 50m of the works. This will include pre-construction monitoring of setts previously recorded within 50m of the proposed development. • Eleven inactive/disused badger setts were recorded during the ecology surveys undertaken for the proposed development. Ten of these setts were recorded within 6m of the proposed development boundary and one was recorded within 15m of the proposed development boundary. Exclusion of badgers from disused or currently inactive setts, may be entertained during any season. Confirming that a sett is inactive during the breeding season (i.e. with no possibility of cubs below ground) will require a brief period of sett monitoring (e.g. five or more days of checking activity either with sticks or with sand pads on the spoil heaps to identify footprints). • Four active outlier/subsidiary setts, all within 4m of the proposed development boundary, were recorded during the ecology surveys carried out for the proposed development. These setts will require temporary exclusion from the setts for the duration of the construction works. Temporary exclusion from an active sett can be carried out from July – November only. Exclusion from the

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	sett must be carried out under supervision by the ECoW. The setts can be reinstated following the completion of the construction works. • Four active outlier/subsidiary setts, all between 20-35m from the proposed development, but within the land-take area, were recorded during the ecology surveys undertaken for the proposed development. These setts will not be lost as a result but pre-construction monitoring is required in case of disturbance to badger. • One active main sett within 30m of the proposed development was identified during the ecological surveys. A 30m exclusion zone must be set up around this sett between July – November and a 50m exclusion buffer zone but be set up between December – June. No works shall be undertaken within the exclusion zone. This work must be carried out under supervision from by the ECoW. • If a new sett is identified within the vicinity of the proposed development works prior to or during construction, the works at this location will cease immediately. A 30m or 50m buffer exclusion zone shall be established around the sett, depending on the time of year and nature of the sett. No works shall be undertaken within the exclusion zone.
4.29	KER 7: Bats: The following mitigation measures relating to the protection of Bats will apply during the construction phase: • There is 1 No. confirmed roost in a crevice under the arch barrel of a masonry bridge along the abandoned railway line. The location of this bridge is at Ch. 18320, west of Lough Mourne. It is proposed to temporarily exclude the roost during the works to avoid disturbing bats during construction. As such, a derogation licence has been granted by the NPWS (Derogation Number: DER-BAT-2026-143). It is a condition of this licence that the mitigation measures outlined in the Licence Application report are carried out and strict adherence must be paid to all proposed mitigation measures. These mitigation measures regarding the exclusion of the roost will be implemented as follows: • The roost will be clearly marked by the licenced ecologist and easily identifiable. The ECoW will advise the contractor of the presence of the bat roost as part of a Toolbox Talk. Repointing will not begin until the people doing the repointing have attended the Toolbox talk. • The confirmed roost will be temporarily excluded to avoid disturbing bats during construction. The implementation of the mitigation measures will be supervised by the ecologist named on the licence application form. The exclusion of the roost will be undertaken between March and October, to avoid impacting hibernating bats. Depending on the programme, it may be possible to exclude the roost during the winter months when the bats are not present. This would be preferable and would avoid the need to exclude bats from the roost when they might be present. • The roost will be inspected by the ecologist with an endoscope no more than three weeks in advance of the works. The ecologist will be licenced to undertake invasive surveys that could disturb bats. • If the crevice can be inspected in its entirety and the licenced ecologist can confirm with confidence that no bats are present, the crevice entrance will be stuffed with material such as cloth or plastic to prevent bats entering it for the duration of the construction phase. • If a bat or bats are found in the roost, or if the entirety of the features cannot be examined, a one-way bat exclusion device consisting of a plastic base with a plastic cone fitted over the feature. It will be fixed at the top and be open at the bottom. This will allow bats to leave the roost but not return. The base will be fixed to the arch barrel using screws. • The roost and bat exclusion device will be checked weekly to ensure that the material excluding the roost or the one-way bat exclusion device is still in place and secure. • The installation of the one-way bat exclusion device, if it is required, will be undertaken under the supervision of the licence holder. The installation of the one-way bat exclusion device and the repointing will be supervised by the licence holder. The role of the ECoW will be to ensure that the bat exclusion device is secured and sealed properly. • Once the works are completed, the material blocking the roost, or the bat exclusion device (if required) will be removed. Two self-cleaning crevice type bat boxes made of woodcrete or similar will be fitted to the structure. Placement of the bat boxes will be confirmed by the ECoW. Preconstruction inspection surveys will be undertaken at all structures and trees described in Table 7-14 of the EIAR Chapter 7. The surveyor will hold a derogation licence to disturb roosting bats. Where the previously identified features can be inspected using and torch and/or endoscope and no bats are found, the feature will be filled with material such as cloth or plastic to prevent bat entering the features before the works take place. The preconstruction survey will be undertaken from a safe and appropriate working platform.

No.	Description

	• If bats are found during pre-construction inspection surveys in features not previously confirmed as bat roosts, no works will be undertaken to the tree or structure and advice from the NPWS will be sought.
	• Felling of trees with bat roosting potential will only take place in September, October, and March to avoid maternity roosts and hibernating bats.
	• Lighting during the construction phase of the proposed development, as outlined in 7.10.2.2 of the EIAR will reduce artificial lighting impacts on bats.
	• Where bat roosts are found during pre-construction surveys, 2 No. bat boxes will be provided for every roost that is disturbed.
	• All works will be undertaken in accordance with 'Guidelines for the treatment of bats prior to the construction of national road schemes' (TII, 2005b)
	• Lighting will be required at the trailheads and the sections closest to Donegal Town and Ballybofey/ Stranorlar (Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). These sections include bridges over the River Eske and River Finn. The lighting will be in accordance with the Institution of Lighting Professionals & Bat Conservation Trust guidance (ILP, 2023), and will include the following elements:
	  ○ All lighting will be a warm-white colour of 2200K or less.
	  ○ Lamp post lighting will be LED and have no upward light spill and a sharp horizontal cut off.
	  ○ Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns.
	  ○ Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2020, P4.
	  ○ Lighting at trailheads, including Biddy's, will be restricted to targeted locations around the carpark boundary, illuminating the carpark area only. The closest lamp post to the Lowerymore River is at least 20m and will be separated from the river by planted screening.
	  ○ Where lighting is required on bridges, such as the existing river Eske crossing and the proposed River Finn crossing, lighting will be limited to discreet recessed ground lights which will act as waymarkers with no downward light spill onto any watercourses. No lighting will be provided on the proposed River Eske crossing or the proposed River Lowerymore crossing.
	  ○ Appendix 4.2 Maintenance and Management Plan of this EIAR includes the provision of a Biodiversity and Landscape Management Plan, within which lighting has been considered.

4.30	KER 8: Red Squirrel: The following mitigation measures relating to the protection of Red Squirrel will apply during the construction phase: • Four dreys were identified during the ecology surveys undertaken for the proposed development, three of which were recorded within 50m of the proposed development. None of the trees where dreys were identified are scheduled for removal as part of the proposed development. • A pre-construction survey will be carried out by a suitably qualified ecologist two to three weeks prior to the commencement of any works to check for occupancy of existing dreys and to ensure there are no new dreys within 50m of the works. • If new dreys are located on trees to be affected by site clearance, no works will be undertaken to the tree and advice from the NPWS will be sought. • All known dreys within 50m of the proposed development will be monitored over at least three mornings (dawn) in suitable weather conditions which is recommended for establishing use, either using direct observations, video or suitably sited trail cameras. • If active dreys are found, the commencement of works including site clearance will be undertaken from, from mid-October to January, when there is least chance of encountering young squirrels. • If any dreys are required to be removed, in order to compensate for the destruction of one drey, three artificial dreys will be erected in areas of suitable habitat. Suitable placement and installation of the artificial dreys will be supervised by a suitably qualified ecologist on the ground at least three weeks prior to the destruction of the drey under licence from NPWS.
4.31	KER 9: Birds: • In addition to the water quality measures outlined in Section 7.10.2.1, and landscaping measures in Section 7.10.2.4 of Chapter 7 of this EIAR, site clearance including vegetation removal will take place between September and February inclusive to avoid nesting birds. If site clearance is required during the nesting bird season (March-August inclusive), the area will be checked by the ECoW. If nesting birds are found to be present, the site clearance works will cease until the chicks have fledged, or, until the NPWS have been consulted to determine the course of action. Vegetation planting as described above will provide new nesting habitat and dipper/grey wagtail

No.	Description
	nesting boxes will be provided as further nesting bird mitigation. The locations of these dipper/grey wagtail nesting boxes will be installed inside the following bridges: ○ S12 - Old railway overbridge (Lough Mourne) (Ch. 18360) ○ S16 - Old Railway underbridge (Ballybofey) (Ch. 26745) ○ Small redbrick archbridge (Ch. 25085)
4.32	KER 10: Invasive Species: Japanese Knotweed, Giant Knotweed, Himalayan Knotweed, Rhododendron and Himalayan Balsam were recorded at various locations along the route of the proposed development. The following measures will be implemented with regards to KER Invasive Species. • The control and management procedures outlined in the Invasive Species Management Plan, presented in Appendix G of the CEMP, will be adhered to during the construction of the proposed development. • The Contractor shall prepare a detailed Biosecurity Protocol describing their proposed approach to ensuring that invasive species are not imported or spread during the construction of the proposed development. The Contractor's Biosecurity Protocol shall be in accordance with The Management of Invasive Alien Plant Species on National Roads – Standard (TII, 2020a) and The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020b). The Biosecurity Protocol shall include, as a minimum, the following measures to prevent the spread of invasive species: ○ Good construction site hygiene will be employed to prevent the introduction and spread of problematic IAPS (e.g., Japanese knotweed and Himalayan Balsam) by thoroughly washing vehicles prior to leaving any site. ○ All plant and equipment employed on the construction site (e.g., excavators, etc.) will be thoroughly cleaned down in designated areas only using a power washer unit prior to arrival on site to prevent the spread of IAPS. ○ Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present. ○ Landscaping of the proposed development shall use native species of plants of national provenance only and, insofar as possible, soil reused from on-site excavations. If soil/substrate needs to be imported to the site for the purposes of the proposed development, the Contractor shall ensure that the imported soil/substrate is free from invasive species.
Mitigation Measures – Operational Phase	
4.33	Sustainable Urban Drainage Systems (SuDS) The drainage design for the proposed development will be designed in accordance with the following TII publication standards: • TII DN-GEO-03047 Rural Cycleway Design (Offline & Greenway) – February 2025 • TII DN-DNG-03022 Drainage Systems for National Roads – February 2024 • TII DN-DNG-03064 Drainage of Runoff from Natural Catchments (including Amendment No.1 dated June 2015) – June 2015 • TII DN-DNG-03062 Edge of Pavement Details (including Amendment No.1 dated June 2015) – June 2015
4.34	As per TII DN-DNG-03022, the design intent is to achieve the efficient removal of surface water to provide safety, provide effective sub-surface drainage to maximise the lifespan of the pavement and earthworks, and minimise the impact of the runoff on the receiving environment. To achieve those three major objectives, the proposed greenway will utilise: • New over-the-edge drainage ditches for the interception of surface water from the greenway • New pre-earthworks drainage ditches for the interception and diversion of surface runoff from adjacent land away from the greenway. • New filter drains within the verge where the greenway is in cut. • New carrier drains where surface water needs to be conveyed below roads. • Attenuation swales for the attenuation of runoff from the greenway surface. • Pipe or box culverts where the greenway crosses watercourses and field ditches and bridge structures for major watercourse crossings. • If there are any locations where existing ditches can be utilised, these may be incorporated into the drainage design if the capacity within the channels is sufficient. For the trailheads, the design

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	will include for permeable, flood resilient materials such as Grasscrete or similar porous paving for new areas of car parking and resin bound gravel for new areas of congregating spaces. Additional impermeable surfacing will be minimised and attenuation in the form of swales or basins will be provided.
4.35	Lighting will be required at the trailheads and the sections closest to Donegal Town and Ballybofey/ Stranorlar (Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). These sections include bridges over the River Eske and River Finn. The lighting will be in accordance with the Institution of Lighting Professionals and Bat Conservation Trust guidance (ILP, 2023), and will include the following elements: • All lighting will be a warm-white colour of 2200K or less. • Lamp post lighting will be LED and have no upward light spill and a sharp horizontal cut off. • Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns. • Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2020, P4. • Lighting at trailheads, including Biddy's, will be restricted to targeted locations around the carpark boundary, illuminating the carpark area only. The closest lamp post to the Lowerymore River is at least 20m and will be separated from the river by planted screening. • Where lighting is required on bridges, such as the existing River Eske crossing and the proposed River Finn crossing, lighting will be limited to discreet recessed ground lights which will act as waymarkers with no downward light spill onto any watercourses. No lighting will be provided on the proposed River Eske crossing or the proposed River Lowerymore crossing.
4.36	**SuDS Greenway Drainage Design:** • Along the proposed development corridor, drainage will largely consist of over the edge drainage along the length of the development. Along the abandoned railway corridor, existing ditches will be cleaned and regraded if necessary, and additional attenuation swales added to control the runoff to existing watercourses. In offline sections the drainage will be designed to connect to existing watercourses, making use of existing drainage channels as far as possible and providing new attenuation where required. In some areas, pre earthworks drainage is required at the toe of the embankment to catch runoff from adjacent lands, this will be in the form of filter drains or ditches. Filter drains will also be provided for low points in cut, and carrier drains in situations where the outfall from the swale may have to cross the greenway prior to enable discharge to a watercourse. • Swales are shallow, vegetated ditches designed to manage surface water runoff, prevent erosion, and enhance water quality. These will be installed along the greenway route, particularly in areas where natural drainage solutions are needed. • Infiltration trenches are linear excavations usually filled with permeable granular material, that allows for the temporary storage of water before it infiltrates into the ground. These will be installed along the greenway route where space is constrained and the provision of a swale is not feasible. • A crossfall of 2% has been provided along the length of the greenway pavement to facilitate drainage and prevent standing water. Crossfall on verges will be kept to a minimum to allow for infiltration and to limit the overall runoff. • Where the proposed greenway intercepts a watercourse, a pipe, box culvert, or bridge structure will be required to maintain the connectivity of watercourses. Where pipes, culverts, and bridges are required as part of the greenway drainage design, an application has been made to the Office of Public Works (OPW) for Section 50 consents where required. • All surface water runoff will be directed to existing watercourses. Where existing drains are not available, new shallow v-ditches will be constructed which will convey surface water to the nearest watercourse. No new outfalls will be constructed into the River Eske, as described in Section 7.10.3.2 of Chapter 7 of this EIAR. Attenuation will be provided at the trailheads which will ensure that surface water runoff does not exceed greenfield runoff rates.
4.37	**SuDS Trailhead Drainage Design:** • The proposed trailheads will be designed to maximise permeable surfacing where possible, in order to reduce the runoff rate, reduce level of attenuation required and minimise the risk of flooding. Where additional impermeable surfacing is proposed, drainage will be attenuated by a swale or a basin and released at the greenfield runoff rate to mimic the existing hydraulic conditions and minimise impacts on the receiving environment. • All new car parking areas are proposed to be constructed from a cellular porous paving solution such as Grasscrete or Truckcell, which provides approximately 90% permeability and captures hydrocarbon spills such that each pocket can be emptied and refilled with soil/grass seed in the

No.	Description
	event of die-back. A small number of gullies will be provided to account for the slight reduction in permeability, and these will convey runoff to attenuation swales or basins prior to discharge. • In terms of hydrocarbon spillages, one of the unique aspects of cellular permeable paving is that any spillage is limited to a self-contained "pocket" and will create die-back in the grass of this "pocket". However, it will be limited to a local scale and will be apparent at ground level. Maintenance would therefore require only that the "pocket" is emptied and refilled with soil and grass seed. • There are areas of existing impermeable car parking (bitumen macadam) at the Donegal Town and Stranorlar trailheads, which are largely proposed to be retained along with the existing drainage regime. To provide some betterment, the drainage regime will be formalised to include for gullies at surface level and attenuation to greenfield runoff prior to discharge. • For the amenity areas where greenway users will congregate, permeable resin bound gravel is proposed to minimise the impact of additional runoff.
4.38	In relation to wastewater treatment: Sanitary facilities will be provided at Donegal Town, Biddy's O'Barnes, and Ballybofey / Stranorlar, and will include toilets, accessible toilets and baby changing facilities. These facilities will be maintained and serviced by Donegal County Council.
4.39	In relation to fencing and landscaping: • During the construction phase, temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with '*BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations'* (BSI, 2012). • The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the ECoW in consultation with the Arboriculturist. Existing land boundaries will be retained. Where minor vegetation removal within hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction. • A tree survey and tree protection plan will be carried out in advance of site clearance. Tree protection fencing will be erected around trees which are to be retained and will include the Root Protection Area in accordance with BS 5837. The Arborist will have at least five years' experience in the survey and assessment of trees in accordance with BS 5837. The Arborist will be retained as required by the principal contractor to monitor and advise on any works within the RPA of retained trees to ensure successful tree retention and planning compliance. No storage of materials, plant movement or soil deposition will occur within these exclusion zones. • Following the completion of the construction phase, lands temporarily acquired will be reinstated to existing agricultural condition. Where access is proposed affecting existing property boundaries, these areas will be reinstated on a like for like basis and may require the replanting of hedgerows/trees, as required. • Fencing and landscape planting is proposed along certain stretches of the route of the proposed development. In general, the construction of new fencing will be minimised, and existing boundaries will be retained where possible. Dense vegetation exists alongside the route, and it is proposed that no fence will be installed in these areas to promote cohesion with the surrounding natural environment. Standard post and rail fence will be used along the boundary of the greenway for sections of the route where dense existing vegetation does not exist, and stock proof fencing will be installed in areas where livestock are found in adjacent fields. The landscaping plan includes the widespread planting of native Irish species of trees and shrubs, natural wildflower regeneration, woodland flora planting and wetland creation. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031. • Where fencing is proposed, the fencing will end 10cm above ground level to allow small animals including otter to cross the greenway. • The existing hedgerows and treelines that form the boundaries of the railway corridor and field boundaries will be retained. Vegetation clearance will be minimised along the length of the greenway itself, and will only be undertaken within the footprint of the greenway. The only work that will take place outside the fence line but within the proposed development boundary is the proposed landscape planting. All of the existing vegetation outside of the earthworks zone will be retained.
4.40	The species listed below are examples of the species that can be used for the proposed hedgerows. These species are native, tolerant to exposure and mostly fast growing. The final specification can

No.	Description
	include other species depending on availability and will be signed off by the ECoW in advance of ordering the plants. Evergreen • Holly - *Ilex aquifolium* • Gorse - *Ulex europaeus* • Wild privet - *Ligustrum vulgare* **Deciduous** • Hawthorn - *Crategus monogyna* • Broom - *Cytisus scoparius* • European Spindle - *Euonymus europaeus* • Burnet Rose - *Rosa spinosissima* (*R. pimpinellifolia*) • Dog rose - *Rosa canina* • Grey willow - *Salix cinerea* • Hazel - *Corylus avellana* • Elder - *Sambucus nigra* Where woodland flora planting is proposed, shade-tolerant species will be planted, for example: • Ramsons - *Allium ursinu*m • Primrose - *Primula vulgaris* • Bluebells - *Hyacinthoides non-scripta* • Wood Anemone - *Anemone nemorosa*

4.41	Based on the landscape design, approximately 5.5km of linear habitat will require clearance over the length of the proposed development to facilitate construction. This includes approximately 1.6km of linear habitat (e.g. small areas of existing hedgerows to be removed/trimmed for visibility and where the proposed development is required to 'punch through') and 3.8km of overgrown vegetation (i.e. overgrown shrubs and immature trees within the abandoned railway corridor). Approximately 17km of linear habitat will be planted, including individual tree planting, proposed hedgerows and treelines for screening. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031.
	The proposed development's landscaping design ensures that habitat connectivity is not severed and habitat loss is minimal. In addition to the above, this also includes:
	• Tree planting to provide commuting habitat along the proposed development and to guide fauna to other linking tree lines/hedges and woodland. A network of vegetation within the proposed development boundary will provide additional biodiversity within the landscape given the abundance of low value GA1 and GA2 in the landscape.
	• The verges along the proposed development will be allowed to revegetate naturally with locally occurring native species.
	• Reseeding with commercially available grass seed or wildflower mixes will be avoided.
	• Excavated soil will be reused on site, including for required embankments to support the construction of the proposed development.
	• Areas where vegetation has been removed and soil will be reused on site; this will be allowed to revegetate naturally. This includes the embankment areas.
	• Outside of urban areas, where trees are planted, no herbicides or mulch will be applied, and native flora will be allowed to regenerate naturally.
	• Wetland habitats, such as ponds, will be incorporated into the design of the drainage areas where attenuation is proposed. The wetlands will not affect the primary flood storage function of these areas. Guidance on the construction of reed beds is available in:
	  ○ *Bringing Reedbeds to Life: Creating and Managing Reed Beds for Wildlife* (RSPB,2014).
	  ○ *Reedbed Design and Establishment. Information and Advice Note.* Version 4 (RSPB, 2004).
	• Use of herbicides will be carefully controlled to treat invasive species, to keep the tracks clear of vegetation growth and in particular circumstances elsewhere where vegetation control measures are necessary.
	A full, detailed appraisal of the habitats that will be lost, retained, created and enhanced is provided in the Biodiversity Net Gain assessment, which accompanies this planning application under separate cover.

No.	Description
4.42	In relation to bins and signage: • Signage will be provided to require that dogs are maintained on a lead for the duration of their visit to the greenway and that dog owners are required to pick up and dispose of dog excrement using the bins provided. This signage will be included at trail heads and at regular intervals along the route. The subject matter of the signage and suggested locations are presented below. Signage will inform greenway users of the importance of the general area to biodiversity and request responsible behaviour for all those using the amenity. • Subject matter and suggested locations of proposed signage:

Subject	Locations
Dogs must be kept on leads at all times.	At the trailheads. The entrances to the greenway from the trailheads.
Leave no trace messaging, in particular cleaning up after dogs.	At regular intervals along the route. Adjacent to Lough Mourne and Lough Eske.
No access to private lands	At field gates.

- To avoid an excessive amount of signage being installed and potentially ignored by users, the final locations of signs will be coordinated by Donegal County Council.
- Waste bins, which will also function as dog fouling receptacles, will also be located at the 3 major trailheads. Donegal County Council will be responsible for the waste management of these bins and receptacles.

1.6 Mitigation and Monitoring Measures for Land and Soils

The table below details the mitigation and monitoring measures identified in Chapter 08, Land and Soils.

Table 1-5 - Mitigation and Monitoring Measures relating to Land and Soils

No.	Description
Mitigation Measures – Construction Phase	
5.1	To prevent soil erosion, excavations will be completed and promptly backfilled or topsoiled. Construction works will need to be limited during heavy rainfall (heavy rainfall is defined as status yellow-level rainfall, defined by Met Éireann as 20mm – 30mm in 6 hrs or less, 30mm – 40mm in 12 hrs or less, or 30mm – 50mm in 24 hrs. To reduce contamination risks, refuelling of machinery will be restricted to designated areas with spill containment measures. Earthworks for the proposed development will be managed by erosion and sediment control measures as described in Appendix 4.1 Construction Environmental Management Plan (CEMP) in Volume 4 of this EIAR. This plan will incorporate multiple protective measures including the installation of sediment traps, swales and ditches before any major site earthworks take place.
5.2	The proposed development contains deposits of peat/organic soils that require specialised protection measures. Disturbance of these soils will be generally avoided through use of a floating construction technique consisting of geotextile and geogrid layers across the peat surface under a crushed stone capping layer. All plant movement in these areas will be restricted to designated routes protected by temporary timber matting, with specialist machinery having lower ground pressure. Where peat excavation is unavoidable, the material will be reused on-site for habitat restoration areas and landscaping.
5.3	A comprehensive soil testing program shall be implemented prior to construction in areas of suspected contamination, particularly along the abandoned railway corridor. Any identified contaminated materials will be segregated and disposed of at licensed facilities. All construction compounds will be equipped with spill containment kits and designated refuelling areas located far enough from watercourses to prevent hydrocarbon contamination.
5.4	During the construction stage for the proposed greenway, a geological inspection will be undertaken by a qualified engineering geologist. This inspection will cover the mountainside above the old railway through Barnesmore Gap to identify any potentially unstable boulders and/or rock faces that could create a rockfall risk towards the greenway. If necessary, stabilisation works will be undertaken to reduce such

No.	Description
	risk to an acceptably low level. Targeted stabilisation works shall be carried out including removal or scaling of loose, unstable boulders and provision of low height drystone walling or gabion baskets locally using rock and stone materials obtained on site. The maximum heights of such structures are of the order of 1.0 to 1.5 metres in the majority of cases.
5.5	The CEMP will incorporate detailed method statements for inspection for any potential slope stability risks within or adjacent to the works areas supervised by a qualified engineering geologist who may identify suitable protective measures to be adopted.
Mitigation Measures – Operational Phase	
5.6	Geological inspections of the mountainside above the old railway through Barnesmore Gap will be carried out every 5 years to monitor the stability and safety of the mountain slope, and any necessary further stabilisation measures will be carried out to ensure the ongoing safety of the greenway. These inspections will be mitigation measures against external natural hazard of rockfall, not against any impact caused by the proposed greenway.
5.7	Periodic inspections and monitoring will be undertaken of the geological stability of the mountain slope at Barnesmore Gap so that any necessary stabilisation measures can be applied. All inspections and monitoring activities shall be carried out by or on behalf of Donegal County Council with a qualified engineering geologist. The inspections will involve visual inspections and walkovers which have no environmental impact. Mountain slopes above the greenway from Ch. 12300 to 14400 shall be monitored with a focus on identifying loosened boulders and/or unstable rock faces as well as signs of recent rockfall. The scope includes visual assessment of rock slopes, comparison with baseline boulder mapping and inspection of any installed mitigation measures as detailed in Chapter 08 of this EIAR. If unstable features are identified after each inspection, a separate assessment shall be undertaken to determine the further works required.
5.8	Monitoring of existing structures and earthworks during construction activities will be required to ensure their long-term stability and durability by the Contractor under the supervision of Employer's Representative. Periodic inspections of all slope stabilisation works and earthworks by a qualified project geotechnical engineer and/or engineering geologist shall be conducted during and immediately following construction activities.

1.7 Mitigation and Monitoring Measures for Hydrology

The table below details the mitigation and monitoring measures identified in Chapter 09, Hydrology.

Table 1-6 - Mitigation and Monitoring Measures relating to Hydrology

No.	Description
Mitigation Measures – Construction Phase	
6.1	During construction, the following guidance documents for construction work on, over or near water will be adhered to: • CIRIA (2001) C532 *Control of water pollution from construction sites: guidance for consultants and contractors;* • Central Fisheries Board *Channels and Challenges – The enhancement of Salmonid Rivers;* • CIRIA (2006) *C648 Control of water pollution from linear construction projects: technical guidance;* • OPW (2019) *Construction, Replacement or Alteration of Bridges and Culverts: A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945;* • TII (December 2005) *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes CC-ENV-01101;* • IFI (2016) *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters;* and • Eastern Regional Fisheries Board *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.*
6.2	A Site Environmental Manager (SEM) shall be appointed prior to the commencement of works. The SEM shall be responsible for environmental monitoring and ensuring implementation of mitigation measures,

No.	Description
	including the Construction Environmental Management Plan (CEMP) and site-specific method statements.
6.3	A suitably qualified and experienced Ecological Clerk of Works (ECoW) shall be appointed for the duration of the construction the construction phase to oversee implementation of mitigation and monitoring measures. The minimum qualifications and experience level of the ECoW are specified within Section 3.3.10 of the Construction Environmental Management Plan (CEMP).
6.4	Prior to any site clearance, excavation or construction, a Construction Environmental Management Plan (CEMP) shall be prepared by the Contractor. The CEMP shall define the overall environmental management and control of the construction phase and ensure that all mitigation commitments are implemented.
6.5	Site-specific method statements shall be prepared for relevant construction activities, setting out how works shall be undertaken in accordance with environmental requirements.
6.6	Construction sites shall be clearly defined and temporarily fenced as appropriate at the outset of works.
6.7	Where earthworks are required within 30m of a waterbody, appropriate erosion, sedimentation and drainage controls shall be implemented: • Ditches and drains shall be temporarily bridged or otherwise protected, where required, to avoid unnecessary vehicle movement across watercourses. • Riparian vegetation shall be fenced to provide an appropriate stand-off distance from the waterbody. • Where disturbance within riparian zones is unavoidable, exposed soils shall be stabilised using biodegradable geotextile or equivalent measures until vegetation is re-established. • Areas of bank reinstatement shall be protected using biodegradable materials to promote vegetation establishment and reduce erosion potential. • Silt fencing or equivalent sediment barriers shall be installed along the downslope perimeter of disturbed areas adjacent to watercourses to intercept sediment-laden runoff. • Sediment control measures shall include provision of ponding areas and shall be subject to regular inspection, maintenance and removal of accumulated sediments. • Additional measures, such as coir logs, straw bales or check dams, shall be implemented in concentrated flow paths and at outfalls, where required. • Temporary haul roads shall be constructed and maintained to minimise erosion and sediment generation and shall incorporate appropriate surface treatment and drainage controls to direct runoff away from watercourses. • Clean water shall be diverted around disturbed areas using interceptor drains or swales to prevent run-on. • Perimeter bunds or equivalent measures shall be implemented where required to prevent uncontrolled discharge from excavated areas.
6.8	At construction sites located within 50 m of a watercourse, appropriate site management, drainage and pollution control measures shall be implemented: • Prior to commencement of works, a site-specific work plan shall be prepared. This shall include details of access routes, working areas, material storage areas, environmental constraints and proposed mitigation measures, together with an emergency response plan for accidental spillages. The plan shall be approved by the Site Environmental Manager (SEM) and Ecological Clerk of Works (ECoW). • Riparian vegetation shall be protected through appropriate fencing, with stand-off distances maintained where practicable. Where vegetation clearance is required, exposed soils shall be stabilised using appropriate measures until vegetation is re-established. • Areas of disturbed ground shall be reinstated and stabilised as soon as practicable to minimise erosion and sediment mobilisation. • Appropriate sediment control measures shall be implemented to intercept runoff from construction areas and shall be subject to regular inspection, maintenance and removal of accumulated sediments. • Additional measures, such as coir logs, check dams or equivalent controls, shall be implemented in concentrated flow paths and at outfalls, where required. • Runoff from construction areas shall be managed through appropriate drainage measures, including diversion of clean water away from working areas and routing of site runoff to settlement or treatment systems prior to discharge.

No.	Description
	• Haul roads and delivery areas shall be constructed and maintained to minimise erosion and sediment generation and shall incorporate appropriate drainage controls. • Wheel wash facilities shall be provided where required to prevent the tracking of sediment onto the public road network. • Concrete batching and washout shall be carried out in designated areas on impermeable surfaces, located away from watercourses, and shall be managed to prevent uncontrolled discharge. • Sludge and waste materials arising from site activities shall be regularly removed and disposed of at appropriately licensed facilities. • Refuelling, maintenance and storage of fuels, oils and chemicals shall be undertaken in designated, bunded areas located away from watercourses and drainage features. • Spill kits shall be provided at all relevant locations, and site personnel shall be trained in their use. • Construction plant and equipment shall be regularly inspected and maintained to prevent leaks and spillages. Maintenance activities shall be undertaken in controlled areas to prevent contamination of soils and watercourses.
6.9	For works adjacent to watercourses and hydraulic structures, appropriate controls shall be implemented: • Works in, over, under or adjacent to watercourses shall, where practicable, be avoided. Where this is not possible, works shall be undertaken using methods that minimise disturbance to the channel and surrounding environment. • Prior to commencement of works, a site-specific method statement shall be prepared for works in proximity to watercourses. This shall include details of access, working methods, environmental controls and emergency response procedures, and shall be approved by the SEM and ECoW. • Temporary dry working conditions shall be established where required, using appropriate low-impact techniques. Measures shall be implemented to prevent the downstream propagation of sediments or contaminants during works. • For smaller scale works (e.g. outfalls or bank works), temporary flow isolation measures shall be implemented to create a dry working area. • Prefabricated elements (e.g. headwalls) shall be used where practicable to minimise the need for in-situ concrete works adjacent to watercourses. • In-stream works, including culvert installation, shall be undertaken within appropriate seasonal windows and in consultation with Inland Fisheries Ireland. • Machinery access routes shall be managed to minimise disturbance to soils and riparian areas, including the use of appropriate ground protection measures where required. • Dewatering activities shall be controlled to prevent the discharge of sediment-laden water to receiving waterbodies, including the use of settlement or filtration systems as appropriate. • Concrete works shall be undertaken in a manner that prevents the release of uncured concrete or alkaline runoff to watercourses. Formwork shall be designed to prevent leakage, and appropriate materials shall be used. • Downstream protective measures shall be installed where required to intercept sediment during works. • Any temporary works associated with flow diversion or channel modification shall be removed following completion of works, and the channel and banks reinstated to pre-construction condition, as far as practicable. • Where riparian vegetation is disturbed, appropriate reinstatement and stabilisation measures shall be implemented to restore channel margins.
6.10	In addition to general mitigation measures, the following controls shall be implemented at the Bridge S04 construction site due to the requirement for bored pile foundations in proximity to a waterbody: • A site-specific risk assessment shall be undertaken prior to the commencement of piling works, in consultation with the National Parks and Wildlife Service and Inland Fisheries Ireland, to identify and manage potential risks to water quality and hydromorphology. • Drilling and piling activities shall be undertaken from suitably designed and stable working platforms to prevent disturbance of underlying soils and minimise the mobilisation of sediment. • Drilling fluids shall be selected, used and managed in a manner that minimises potential environmental impacts. • All drilling, pumping and slurry management operations shall be confined to controlled working areas, with appropriate containment measures implemented to prevent the release of material to surrounding soils or watercourses.

No.	Description
	• Pumps, hoses and associated equipment shall be regularly inspected and maintained to prevent leaks and spillages. • Boreholes shall be appropriately cased and sealed to prevent interaction between groundwater and surface water and to maintain the integrity of the surrounding environment. • Any arisings from drilling and piling operations shall be contained, handled and disposed of in accordance with relevant environmental requirements.
Mitigation Measures – Operational Phase	
6.11	The design of the proposed development incorporates appropriate surface water management measures, including permeable surfaces, vegetated filter strips, and drainage controls. These embedded design features ensure that surface water runoff is effectively managed and does not adversely affect receiving watercourses or downstream receptors.

1.8 Mitigation and Monitoring Measures for Hydrogeology

The table below details the mitigation and monitoring measures identified in Chapter 10 Hydrogeology.

Table 1-7 - Mitigation and Monitoring Measures in relation to Hydrogeology

No.	Description
Mitigation Measures – Construction Phase	
7.1	A Construction Environmental Management Plan (CEMP) will be prepared as the design progresses, see Appendix 4.1 in Volume 4 of this EIAR. The CEMP will set out the key environmental considerations to be adhered to by the contactor during the construction of the proposed development. The CEMP will also detail the environmental avoidance, mitigation and monitoring measures to be implemented to minimise potential environmental impacts and to comply with the environmental commitments outlined in the EIAR. It will cover all potentially polluting activities and includes an Incident Response Plan (IRP) (See Appendix 4.1 of this EIAR). A Water Management Plan and Monitoring Plan will be prepared as part of the CEMP.
7.2	In addition to the CEMP, an Environmental Operating Plan (EOP) will be developed prior to construction, in accordance with the TII/ NRA's Guidelines for the Creation and Maintenance of an Environmental Operating Plan. The EOP will set out the Contractor's approach to managing environmental issues associated with the construction of the proposed development and provide a documented account to the implementation of the environmental commitments set out in the EIAR and measures stipulated in the planning conditions.
7.3	An Environmental Clerk of Works (ECoW) will be employed for the duration of the construction works. The ECoW will be responsible for monitoring and ensuring the implement of all mitigation measures and compliance with legislative requirements in relation to the water environment.
7.4	General surface water management measures will have regard for CIRIA's *The SuDS Manual* (CIRIA, 2015), and TII's *Road Drainage and the Water Environment* (TII, 2015) and *Standards for Highways' DMRB LA 113, Road drainage and the water environment* (Standard for Highways, 2020) and have been detailed within the CEMP as summarised below: • The existing surface water management system, such as drains, settlement ponds, outfalls and interceptors / separators, will be inspected and confirmed to be in suitable working order prior to any works commencing on the proposed development extent. • New drainage installations will be installed in early stages of construction, alongside the remaining existing drainage facilities, which can be used to treat runoff for silt and hydrocarbons. Daily weather forecasting will also be used to inform the works schedule, ensuring excavation works do not coincide with high intensity or extreme rainfall events. • The proposed surface water management system, including existing and proposed infrastructure, will be inspected and confirmed to be of sufficient capacity to treat any additional water generated by the works, including runoff from dust suppression, prior to discharge. • Washout from power cleaning of drainage lines, oil interceptors or any other pipework which may contain pollutants will be collected and treated. No contaminated washout will be allowed enter any water body or be discharged to ground.

No.	Description
	• There will be regular monitoring and prompt maintenance of the overall surface water management system throughout the works area. This will ensure that the drainage system continues to function as designed. • There will be no direct discharge to any water body at any time during the construction phases. All surface water runoff within the proposed development extent will be directed to this drainage system.
7.5	Silt mitigation measures will be designed to ensure that no sediment contamination, contaminated run off or untreated wastewater will enter watercourses, including the River Eske, Lowerymore River and surface water courses which fall under SACs and GWDTEs. The proposed works will be carried out by employing accepted good work practices during construction, and environment: • All materials will be stored within temporary compounds (see construction compound and temporary construction area details in EIAR Volume 2 Chapter 4: Description of the Proposed Development) and transported to the works zone immediately prior to construction. • Weather conditions will be taken into consideration when planning construction activities to minimise risk of run off from the Site. • Provision of 50m exclusion zones and barriers (silt fences) between any excavated material and any surface water features to prevent sediment washing into the receiving water environment. • If dewatering is required as part of the proposed works, e.g., in wet areas, water will be pumped via settlement tanks or collection basins where any solids can settle out, and suitable best practice dewatering methods will be used. • The Contractor shall ensure that silt fences are regularly inspected and maintained during the construction phase. • If very wet ground must be accessed during the construction process bog mats/aluminium panel tracks will be used to enable access to these areas by machinery. However, works will be scheduled to minimise access requirements during winter months. • The Contractor shall ensure that all personnel working on site are trained in pollution incident control response. A regular review of weather forecasts of heavy rainfall is required, and the Contractor is required to prepare a contingency plan for before and after such events. • The Contractor will carry out regular visual examinations of local watercourses that may be impacted by the proposed works during the construction phase to ensure that sediment is not above baseline conditions. In the unlikely event of water quality concerns, the Site Environmental Manager and ECoW will be consulted. • Excavations will be left open for minimal periods to avoid acting as a conduit for surface water flows. • Only emergency breakdown maintenance will be carried out on site. Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures. • Appropriate containment facilities will be provided to ensure that any spills from vehicles are contained and removed off site. Adequate stocks of absorbent materials, such as sand, or commercially available spill kits shall be available. • Entry by plant equipment, machinery, vehicles and construction personnel into watercourses or wet drainage ditches shall not be permitted. All routes used for construction traffic shall be protected against migration of soil or wastewater into watercourses. • Cabins, containers, workshops, plant, materials storage and storage tanks shall not be located near any surface water channels and will be always located beyond the 50m hydrological buffer; and • Unnecessary clearing and grading will be avoided.
7.6	Fuel and chemical handling will be carried out by employing accepted good work practices during construction, and environmental management measures such as those discussed below: • Unnecessary clearing and grading will be avoided. • Oils and lubricants will be required to be stored at least 50m away from a watercourse where practical and stored in vessels designed to hold 110% of the capacity of the largest tank / container within the bunded area. All plant and equipment shall be checked for leaks of fuel and lubricants before being allowed onto the Site. The Contractor will allow for regular checks and maintenance as required. • Drainage from the bunded area will be diverted for collection and safe disposal. All containers within the storage area will be clearly labelled so that appropriate remedial action can be taken in the event of a spillage. When moving drums from the bunded storage area to locations within the Site, a suitably sized spill pallet will be used for containing any spillages during transit. • Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place in designated impermeable refuelling areas isolated from surface water drains. Spill kit

No.	Description
	facilities will be provided at the fuelling area to provide for any accidental releases or spillages in and around the area. Any used spill kit materials shall be disposed of via a Hazardous Waste Contractor. • All equipment and machinery will be checked for leaks and other potential sources of contaminants before arriving on-site and daily. Any equipment or machinery likely to introduce to contaminants will not be brought on-site or will be removed from the Site immediately if any leak is discovered. Spill kits will be available to machine operators, and they will be trained in their use. • The storage of hazardous substances will be necessary during construction, and several considerations will need to be made to reduce the potential for pollution from these sources. Fuel will be required to be stored at least 50m from a water body and refuelling will only take place in designated areas, on hardstanding by appropriately trained personnel. • Adequate stocks of hydrocarbon absorbent materials (e.g., spill-kits and/or booms) will be held on-site to facilitate response to accidental spills. Spill response materials will also be stored on all construction vehicles.
7.7	Accidental spillages, flooding, or other emergencies will be avoided by employing accepted good work practices during construction, and environmental management measures such as those discussed below: • Leaking or empty oil drums will be removed from site immediately and disposed of via an appropriately licensed Waste Disposal Contractor. • Spill kits and oil absorbent material will be carried by mobile plant and located at vulnerable locations (e.g., near oil filled equipment). Booms will be held on-site for works near water body/ drains. Spill kits will contain a breakable tie to show use and indicates whether it needs to be replenished. The Site Manager and Site Environmental Manager will be responsible for replenishing spill kits. • An IRP will be prepared by the Contractor and included in the CEMP and construction workers trained to respond to spillages. • A copy of the IRP will be kept in the Site Emergency Information File (along with other safety emergency preparedness plans) together with the results of any test of the plan. • Oil interceptors will be required for refuelling areas; runoff from washing areas that contains detergents which may prevent oil interceptors from working correctly will be prevented from entering oil separators by providing separate designated areas for washing and refuelling. • Discharge with oils and chemicals from vehicle washing areas will be considered as trade effluent and therefore will be disposed off-site. • The installation of protective bunds along all water body boundaries and drains during construction will filter contaminants and prevent adverse runoff. • Any plant, machinery or vehicles will be regularly inspected and maintained to ensure they are in good working order and clean for use. • Any site welfare facilities will be appropriately managed, and all foul waste disposed of by a licenced contractor to a suitably permitted facility. • During the construction phase, the Contractor will monitor weather forecasts on a monthly, weekly, and daily basis, and plan works accordingly. The Contractor will describe in the Emergency Response Plan the actions it will take in the event of a possible flood event. These actions will be hierarchal meaning that as the risk increases the Contractor will implement more stringent protection measures. This is important to ensure all workers, the construction site and third-party land, property and people are adequately protected from flooding during the construction phase.
7.8	The following mitigation measures will be designed to ensure that no concrete and lime sediment contamination, contaminated runoff or untreated wastewater will enter watercourses: • All ready-mixed concrete will be brought to the construction site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated water to the underlying subsoil and groundwater. • Wash-down or wash-out of ready-mix concrete is prohibited within a minimum of 20m of any body of water, including ditches and ponds, or surface water drains, and within 5m of a foul drain. Washouts will only be allowed to take place in designated areas with an impervious surface. • Concrete will be used to construct the proposed development and will therefore need to be managed to reduce the potential for pollution. The Contractor will be required to manage and mitigate concrete works ensuring that no concrete is laid during wet weather, so no concrete will be washed off the site and into the surface water drains or water bodies.

No.	Description
	• Other mitigation measures include the use of barriers, avoiding the use of lean mix concrete near surface water features, keeping records of quantities of concrete used and monitoring pH levels in surface water features.
7.9	A Construction Groundwater Control Strategy will need to be prepared by the Contractor at the detailed design stage, in consideration of CIRIA's *Groundwater Control: Design and Practice, Second Edition* (CIRIA, 2016). Furthermore, best practice mitigation measures will be followed to avoid and or minimise impact on groundwater and will be included in the final CEMP. The mitigation measures will be informed by the findings from the planned GI which will provide information of site-specific ground conditions, including groundwater levels, quality and hydraulic properties. The strategy will outline such best practice mitigation measures as, but not limited, to the following: • A sump hole will be created, and pumps will be installed and used to remove the groundwater from the excavation. The groundwater will be pumped to an outfall area with silt mitigation measures, as advised by the relevant consenting requirements. • A physical cut-off barrier (such as a temporary cut-off wall or sheet piles) will be installed between the sump hole and any nearby water receptors requiring protection, or the use of artificial recharge of groundwater or surface water or to pipe a portion of the discharge water directly to the water receptor, ensuring the chemistry and sediment content of the discharge water is monitored and will not have an adverse reaction on the receptor. • If discharging water to a nearby watercourse, the rate of discharge will need to be agreed with the EPA and DCC to ensure that there is no unacceptable increase in flood risk or risk of scour. Any discharge will need to be undertaken with the agreement of the relevant statutory regulator and will need to comply with the pollution prevention requirements set out in the CEMP. • An outfall area will be created using silt bags on the hoses with a silt fence or a combination of two silt mitigation measures. The outfall area will be set up away from any watercourse crossings so the pumped water can naturally disperse into the surrounding area. • Once the outfall has been set up, the EnvCoW will inspect the work prior to pumping. During this process, the outfall area will be monitored, and water quality of the discharge will also be regularaly monitored. • Managing the risk from groundwater flooding through appropriate working practices (during excavations) and with adequate plans and equipment in place for dewatering to ensure safe dry working environments.
Mitigation Measures – Operational Phase	
7.10	Regular inspection and maintenance of the SuDS elements drainage systems and the culverts. This will be carried out in accordance with best practice guidance including but not limited to CIRIA's *The SuDS Manual* (C753) and TII's *Grassed Surface Water Channels for Road Runoff* (DN-DNG-03073). Information regarding the maintenance regime will be provided in Operation and Maintenance manuals.
7.11	The maintenance regime for proposed drainage assets, including any swales and filter drains, will be set out and implemented by DCC to reduce the residual risk from failure or improper function of the drainage system due to blockages.
7.12	During operation, a post-construction water quality and groundwater level monitoring programme will be developed to ensure there is no long-lasting contamination to any water environment receptors. The scope and duration of the post-construction monitoring will also be confirmed with the relevant authorities and DCC by the Contractor.
7.13	Where peat is identified in offline locations, a floating construction technique will be implemented. The floating pavement construction will involve the use of geogrid, geotextile and 6F2 capping on top of the sub-formation level, overlain by the pavement makeup. Floating pavement design is further detailed in EIAR Volume 2 Chapter 04: Description of Proposed Development, EIAR Volume 2 Chapter 07: Biodiversity, and EIAR Volume 2 Chapter 08: Land and Soils.
7.14	Scheme drainage elements associated with the proposed development, such as filter drains to keep the greenway surface free from surface water, will be developed to ensure there is no significant impact to peat, where immediately adjacent to the proposed development, such as the Croaghonagh Bog SAC and pNHA between chainages 17250 and 18200 approximately.
7.15	In accordance with DN-GEO-03047 and DN-GEO-03022, filter drains will be installed along the greenway at this location to maintain a surface free from runoff, outfalling to watercourses west of Lough Mourne. To avoid impacts to the Croaghonagh Bog SAC and pNHA and avoid inducing a hydraulic gradient toward the bog, the filter drains between Chainage 17250 and 18200 will be positioned on the far side of the greenway surface to the bog, be no deeper than 1.5m and be wrapped in an impermeable

No.	Description
	membrane. This is to allow for surface water runoff only and not subsurface drainage or seepage from the bog.

1.9 Mitigation and Monitoring Measures for Air Quality

The table below details the mitigation and monitoring measures identified in Chapter 11 Air Quality.

Table 1-8 - Mitigation and Monitoring Measures in relation to Air Quality

No.	Description
Mitigation Measures – Construction Phase	
Communications	
8.1	The appointed contractor will put in place a Communications Plan in accordance with the employer's requirements. The Communications Plan will provide a mechanism for members of the public to communicate with the Applicant and the appointed contractor, and for the Applicant and the appointed contractor to communicate important information on various aspects of the proposed development to the public. The Communications Plan will include procedures to inform members of the community directly affected by the construction phase on schedules for any activity of a particularly disruptive nature which is likely to impinge on their property, such as boundary works, road closures and diversions, and any mitigating actions that are being taken to minimise such disruption.
8.2	An Environmental Manager (EM) will be assigned by the appointed contractor. The EM will be responsible for co-ordinating the day-to-day management of environmental impacts during the construction phase. The EM will be responsible for performing inspections, as deemed necessary, and managing responses to environmental incidents. The name and contact details of the EM responsible for construction dust management will be displayed at construction compound hoardings.
8.3	A complaints register will be kept by the appointed contractor detailing all telephone calls and letters of complaints received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out.
Site Management	
8.4	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
8.5	Make the complaints log available to the local authority when asked.
8.6	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Preparing and Maintaining the Site	
8.7	Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
8.8	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
8.9	Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
8.10	Avoid site runoff of water or mud.
8.11	Keep site fencing, barriers and scaffolding clean using wet methods.
8.12	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
8.13	Cover, seed or fence stockpiles to prevent wind whipping.

No.	Description
Operating vehicle/ machinery and sustainable travel	
8.14	Ensure all vehicles switch off engines when stationary – no idling vehicles.
8.15	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
8.16	Impose and signpost a maximum-speed-limit of 25 kph on surfaced and 15 kph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
8.17	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
8.18	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
Operations	
8.19	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
8.20	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate
8.21	Use enclosed chutes and conveyors and covered skips.
8.22	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
8.23	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste Management	
8.24	Bonfires and burning of waste materials are legally prohibited
Measures Specific to Demolition	
8.25	Bag and remove any biological debris or damp down such material before demolition.
Measures Specific to Earthworks	
8.26	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
8.27	Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable.
8.28	Only remove the cover in small areas during work and not all at once.
Measures Specific to Construction	
8.29	Avoid scabbling (roughening of concrete surfaces) if possible.
8.30	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
8.31	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
8.32	For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.
Measures Specific to Trackout	
8.33	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.

No.	Description
8.34	Avoid dry sweeping of large areas.
8.35	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
8.36	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
8.37	Record all inspections of haul routes and any subsequent action in a site log book.
8.38	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
8.39	Access gates to be located at least 10 m from receptors where possible.

1.10 Mitigation and Monitoring Measures for Climate

The table below details the mitigation and monitoring measures identified in Chapter 12 Climate.

Table 1-9 - Mitigation and Monitoring Measures in relation to Climate

No.	Description
Mitigation Measures – Construction Phase	
9.1	Where possible, buildings will be retained and demolition avoided to negate additional GHG emissions being released.
9.2	During the design stage, alignment of the Greenway was carefully considered to avoid dense vegetation where possible
9.3	Minimising waste of materials through reusing surplus cut material for earthworks as fill for verges and slopes and reusing concrete/ masonry from demolition as aggregate. The design maximises pre-cast construction off site to reduce wastage.
9.4	Re-use and recycle of materials - In line with TII's Sustainability Implementation Plan and Circular Economy Guidance, the re-use and recycle of materials on site as opposed to disposal and landfill will be prioritised. Measures for managing construction waste are set out in Chapter 4.
9.5	Carbon Tool assumes 50% Cement Replacement for all in-situ structural concrete.
9.6	Cut/fill balance – the alignment design endeavours to follow the natural topography where possible, to minimise the waste produced from the intervention and reduce the transportation of materials.
9.7	Site clearance - The alignment also endeavours to minimise vegetation clearance and sequestration loss where possible by using the existing railway line and running adjacent to field boundaries. An exercise was undertaken to determine the amount of site clearance required and categorise the type of land on which the clearance is occurring. Site clearance and vegetation loss values were then inputted into the carbon tool as calculated.
9.8	In areas of peat, floating construction is proposed ('No-dig' solutions).
9.9	Reduction in 6F2 capping stone and subbase (crushed stone) required along existing railway line. This is a reduction in the standard pavement construction (300mm 6F2 stone and 150-200mm sub-base) by utilising the existing railway line. Geotechnical Investigation has been undertaken and shown that the stiffness and density of the existing sub-ballast is sufficient and therefore the pavement layers can be reduced.
9.10	Fencing design – existing boundaries retained where possible, new fencing to be sheep wire with hedge rather than post and rail where possible.
9.11	Use of existing railway line allows re-use of numerous structures in whole or in part.
9.12	Lighting minimised and only where necessary, see chapter 4. Lighting designed to balance ecological sensitivity and safety/attractiveness for greenway users. Lighting is provided in proximity to the urban

No.	Description
	areas, and therefore it will enable the majority of trips to continue to be undertaken in the hours of darkness.
9.13	Materials to be sourced locally where possible.
9.14	Ordering specific quantities to reduce waste.
9.15	The 3 main compounds will be powered by grid electricity, which has been accounted for in the carbon tool.
9.16	Solar PV will be used for temporary lighting.
9.17	Water will be re-used for wheel washers.
9.18	During construction the Contractor will be required to mitigate against the effects of extreme rainfall and fluvial and pluvial flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures, any concerns will be raised to the Site Manager. Temperatures can affect the performance of some materials, and this will require consideration during construction. During construction, the Contractor will be required to mitigate against the effects of other hazards through site risk assessments and method statements.
9.19	Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the proposed development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the proposed development is not meeting its targets, further mitigation will be put in place. Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.
Mitigation Measures – Operational Phase	
9.19	Planting of native Irish species of trees and shrubs, natural wildflower regeneration and woodland flora planting, which will sequester carbon dioxide
9.20	Waterless toilets will be installed at the proposed development to reduce water use.
9.21	The proposed development will incorporate a combination of Sustainable Drainage Systems (SuDS) and grey stormwater infrastructure, including culverts, storm drains, permeable surfaces, and swales. These measures will help slow runoff rates while expanding the drainage network through green infrastructure.
9.22	For fluvial and pluvial flood risk, the greenway will be constructed using flood-resilient design standards.
9.22	EV charging stations have been identified as highly vulnerable to flooding and have been elevated (7.31mAOD) and positioned in areas with minimal flood exposure, underground cabling will significantly reduce flooding vulnerability and exposure to extreme temperatures. EV chargers will be specified to an IP rating of IP68 to protect against effects of submersion of water. With regards to overheating, modern EV chargers manage heat via derating and modern thermal management; overheating that poses a safety hazard is uncommon when standards and maintenance are followed. Weather protection is part of the ZEVI Universal Design Guidelines for EV chargers.
9.23	Bridge structures will be engineered to meet standards for high wind speeds.
9.24	Landscaping will feature deep-rooted native plants to enhance stability and resilience.
9.25	The bridges and greenway will undergo regular routine inspection and maintenance will be carried out where required.

1.11 Mitigation and Monitoring Measures for Noise and Vibration

The table below details the mitigation and monitoring measures identified in Chapter 13 Noise and Vibration.

Table 1-10 - Mitigation and Monitoring Measures in relation to Noise and Vibration

No.	Description
Mitigation Measures – Construction Phase	
10.1	Based upon the assessment, several residential receptors are predicted to experience noise levels greater than the maximum permissible construction noise levels outlined in **Error! Reference source not found.** of the EIAR, and night-time construction noise thresholds outlined in **Error! Reference source not found.**, highlighting the potential for temporary short term significant adverse effects. Limiting construction works along the proposed development and at compounds to weekday daytime only, due to the higher noise limit during this time, is likely to avoid significant adverse effects. However, if construction works are required on Saturdays (14:00 – 16:30) or outside core construction hours, additional mitigations, such as use of acoustic screening may be required to avoid temporary short term significant adverse effects. The preferred approach for controlling construction noise and vibration is to reduce the levels at source, where reasonably practicable. A greater noise and vibration level may be acceptable where the overall construction time and, therefore length of potential disruption, is reduced. In addition to the best practice and embedded mitigation measures listed in this section and the CEMP, additional noise control measures would be required where significant adverse effects are predicted, especially if the construction works take place outside standard weekday construction hours. These include acoustic screening, shrouds on piling rigs and cranes, jackets on pneumatic drills, acoustic covers on compressors and fitting a suitably designed muffler or other noise reducing equipment to minimise noise without impairing machine efficiency. These further mitigation measures can provide up to 10 to 20 dB noise reduction (based on Table B.1 in BS 5228-1 (BSI, 2014a)).
10.2	A Construction Environmental Management Plan (CEMP) will be included as part of this planning application, which sets out the key measures to be employed during the construction of the Proposed Development to control and minimise impacts on the environment. The Contractors CEMP will confirm how impacts upon NSRs will be managed during construction. Construction activities will typically be undertaken during core construction working hours: • 08:00 – 18:00 (Monday to Friday) and 08:00-14:00 (Saturdays) 24-hour working will be required for the construction of the three underpasses under the N15/N56 national roads. Each underpass location will require 1-2 weekends where construction activities take place outside of normal working hours (24 hours a day) while the national road is closed • No noisy works on Sundays or bank holidays unless required for exceptional circumstances, subject to approval.
10.3	Abiding by maximum permissible construction noise levels / BS 5228-1 category A thresholds (for time periods not covered by the TII maximum permissible construction noise levels) at nearby NSRs.
10.4	Avoidance of working in the more sensitive evening and night-times where practicable.
10.5	Ensuring that processes are in place to minimise noise before works begin and that Best Practical Means (BPM) are being followed throughout the construction programme.
10.6	Using modern plant, complying with the latest European noise emission requirements (HMG, 2011). Selection of inherently quiet plant, where practicable.
10.7	Use of hydraulic techniques for breaking in preference to percussive techniques, where practical.
10.8	Use of rotary bored rather than driven piling techniques (if required), where possible.
10.9	Off-site pre-fabrication where practical.
10.10	Proper maintenance of all plant and equipment used for the works, silenced where appropriate, operated to prevent excessive noise, and switched off when not in use.
10.11	All contractors will be made familiar with current legislation and the guidance in BS 5228-1, BS 5228-2, and TII Guidance (PE-ENV-01111).

No.	Description
10.12	Loading and unloading of vehicles, dismantling of site equipment such as scaffolding, or moving equipment or materials within the Proposed Development will be conducted in such a manner as to minimise noise generation.
10.13	Where practicable, locating of the noisiest items of plant at the furthest distance from the nearby NSRs. Plant known to emit noise strongly in one direction will be orientated so that the noise is directed away from NSRs, where practicable.
10.14	Shutting down of machines such as cranes that may be in intermittent use between work periods or will be throttled down to a minimum. Machines will not be left running unnecessarily.
10.15	Appropriate routing of construction traffic on public roads and along access tracks, to minimise construction traffic noise levels at NSRs, will be described in a Construction Traffic Management Plan (CTMP) (see Chapter 5: Traffic and Transport).
10.16	Consultation with the local authority (DCC) and local NSRs to advise of potential noisy works that are due to take place.
10.17	Use of acoustic screens where practicable and feasible in order to reduce noise levels at the receptors. Acoustic screens can be used successfully as an additional measure to all other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen and its position relative to both the source and receiver. BS 5228-1 states that on level sites, the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier should be such that there are no gaps or openings at joints in the screen material
10.18	Careful planning of the site layout will also be considered. The placement of construction compounds' facilities (such as offices and stores) and, in some instances, materials such as topsoil or aggregate can provide a degree of noise screening if placed between the source and the receiver.
10.19	Monitoring of noise complaints and reporting to the Contractor for immediate investigation.
10.20	Method statements regarding construction management, traffic management, and overall site management will be prepared prior to construction in accordance with best practice guidance and BS5228 to help minimise impacts of the construction works with reference to the measures outlined in the CEMP. One of the main aims of such method statements will be to minimise noise and vibration disruption to local NSRs during the construction phase. Where necessary, mitigation measures and appropriate strategies will be reviewed and confirmed by the construction contractor once the construction plant, methods, and traffic management plans have been finalised. This process will ensure that construction noise thresholds and limits for the relevant time periods are adhered to, in accordance with the requirements outlined in the Construction Environmental Management Plan (CEMP).
10.21	Traffic management proposals in Chapter 5 and the CTMP provide details to reduce potential impacts of construction traffic along Lough Eske. However, it is noted that the potential significant effect is temporary and not anticipated to persist for the full duration of construction, and the predicted construction traffic noise levels remain below Transport Infrastructure Ireland (TII) maximum permissible construction noise limits.
10.22	Regular communication with the local community throughout the construction phase will also serve to publicise the works schedule, giving notification to NSRs regarding periods when higher levels of noise and/or vibration may occur during specific operations, and providing lines of communication where complaints can be addressed. This will be included in the CEMP.
10.23	The Contractor(s) would be encouraged to be a member of the 'Considerate Constructors Scheme' which is an initiative open to all contractors undertaking building work. This will be included in the CEMP.
10.24	Additional noise control measures shall be implemented where significant adverse effects are encountered, especially if the construction works take place outside standard weekday construction hours These may include acoustic screening, shrouds on piling rigs and cranes, jackets on pneumatic drills, acoustic covers on compressors and fitting a suitably designed muffler or other noise reducing equipment to minimise noise without impairing machine efficiency.
Monitoring	
10.25	During the construction phase, the construction contractor will undertake noise monitoring at the nearest sensitive locations, where significant adverse effects are identified. The noise monitoring should be undertaken in accordance with ISO 1996:2017: Acoustics – Description, measurement and assessment of environmental noise. This will be detailed in the CEMP.

1.12 Mitigation and Monitoring Measures for Landscape and Visual Amenity

The table below details the mitigation and monitoring measures identified in Chapter 14, Landscape and Visual Amenity.

Table 1-11 - Mitigation and Monitoring Measures relating to Landscape and Visual Amenity

No.	Description
Mitigation Measures – Construction Phase	
11.1	The following section should be read in conjunction with the Landscape Mitigation Drawings for the proposed development in the EIAR Volume 3 (Drawings: 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001 to 0031) The landscape strategy adopts a layered approach of hedgerow, woodland, and targeted infill planting to support integration of the greenway into its varied context, enhance biodiversity, and provide selective visual screening while retaining the inherent character of the landscape.
11.2	In Donegal Town, hedgerow planting along the Railway Road boundary will comprise native species consistent with the surrounding rural and peri-urban landscape character.
11.3	Hedgerow planting around the car park boundary and adjacent to the St. John Bosco Community Centre will avoid thorny species and will instead use an evergreen mix to provide year-round visual structure and improve the interface with adjacent uses.
11.4	Woodland planting is proposed at selected locations to strengthen connectivity between existing woodlands, compensate for removed trees, and provide localised visual screening.
11.5	Planting has been carefully moderated to avoid introducing continuous linear belts or rows of trees that would be uncharacteristic of the landscape and visually intrusive in open upland views.
11.6	To mitigate the loss of a small area of wet heath habitat at the proposed watercourse crossing at Biddy O'Barnes, a heathland restoration area will be established on suitable adjacent land. This will include the translocation of heather and other heathland species sourced from the affected area to encourage the establishment of wet heath vegetation that reflects the composition and character of the habitat being lost.
11.7	In line with TII guidance, earthworks and embankments will be allowed to regenerate naturally using site-won topsoil.
Mitigation at Trail Heads	
11.8	Landscape interventions at the two primary trailheads at Donegal and Ballybofey include structural planting around car park perimeters to soften the visual presence of hard surfacing and built elements such as signage and bathroom facilities.
11.9	For the intermediate trailheads, tree and shrub planting will be introduced where necessary to bolster this screening and to create a sense of enclosure appropriate to the scale and character of the surrounding landscape.
11.10	Boundary treatments around all trailheads will consist of native hedgerows or low woodland blocks to limit visibility from nearby receptors, particularly from residential properties and elevated viewpoints. Where bathroom blocks will be designed with simple forms and clad in timber, ensuring that built elements remain subordinate to the landscape setting.
11.11	Planting schemes will use locally appropriate native species that respond to the underlying landscape character and provide seasonal interest as well as biodiversity benefits. The landscape treatment of the trailheads forms a key part of the scheme's broader mitigation strategy, ensuring that these necessary interventions do not compromise the visual or experiential quality of the greenway route. Refer to Trailhead layout Drawings 60701883-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-LV-0001, 0002, 0003 & to 0006 in Volume 3 of this EIAR.
Construction phase	
11.12	During the construction phase, mitigation measures will be implemented in accordance with the Guidelines on the Implementation of Landscape Treatments on National Road Schemes in Ireland (Transport Infrastructure Ireland, 2006), which set out requirements for the protection of existing vegetation, appropriate handling of landscape features, and the reinstatement of disturbed areas following construction. Tree protection measures will also be undertaken in accordance with BS

No.	Description
	5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations, which provides detailed technical guidance on protecting trees during construction.
11.13	Temporary fencing will be erected prior to the commencement of works around all compounds, haul roads, and temporary access routes to define the extent of temporary construction areas and prevent unnecessary encroachment into adjoining vegetation, habitats, agricultural land, and retained landscape features. This fencing will also function as tree and vegetation protection fencing, preventing construction activity, storage, or vehicle access within Root Protection Areas (RPAs) identified by the project Arboriculturist. All protective fencing will be installed prior to any site clearance or earthworks commencing and will remain in place for the duration of the construction works. The alignment and stand-off distance of fencing adjacent to retained trees, hedgerows, and treelines will be determined by the Arboriculturist and Environmental Clerk of Works (ECoW) to ensure adequate protection of retained vegetation and habitats.
11.14	The fencing for temporary compounds and haul routes will generally be set back from existing hedgerow and treeline boundaries to avoid unnecessary habitat loss and to protect root systems and established vegetation. Existing field boundaries, hedgerows, and treelines not directly affected by the works will be retained wherever practicable, in line with TII guidance promoting the retention of existing landscape features.
11.15	Where minor vegetation removal within hedgerows is required to facilitate temporary access into compounds or construction areas, these sections will be reinstated and replanted with locally appropriate native species following completion of the works.
11.16	Trees and hedgerows adjacent to construction areas will be protected through exclusion fencing and clearly defined Root Protection Areas to prevent damage from machinery, storage, excavation, or soil compaction. Construction activity will be confined to defined working corridors to reduce the overall footprint of disturbance.
11.17	Topsoil will be carefully stripped, stored, and reused on site to retain its structure and existing seed bank. This will support natural regeneration across disturbed areas, particularly on embankments and earthworks. Soil handling procedures will avoid unnecessary mixing or compaction to maintain soil viability and support successful reinstatement.
11.18	On completion of the works, all temporary compounds, haul routes, access tracks, fencing, and other temporary construction infrastructure within the temporary land take will be removed and the affected areas fully reinstated. Reinstatement works will include regrading, replacement of stored topsoil, and reseeding or planting with locally appropriate native species to restore visual and ecological continuity with the surrounding landscape.
Mitigation Measures – Operational Phase	
11.19	Establishment will be monitored during the early years, and where vegetation cover is slow to establish or becomes dominated by undesirable species, targeted seeding or management will be carried out to ensure a stable and visually coherent finish. Where seeding is required, the choice of grassland mix will respond to local conditions. Drier, free-draining slopes will generally be seeded with a species-rich grassland mix made up of fine grasses and wildflowers, managed through seasonal cutting. In more sheltered areas, particularly beneath or adjacent to woodland planting, a shade-tolerant mix will be used to reflect lower light levels and ensure successful establishment. Within woodland blocks, ground vegetation will be allowed to develop naturally over time, supplemented where necessary with shade-tolerant species to support early establishment. In lower-lying areas or locations subject to seasonal wetness, such as drainage features or floodplain edges, a wetland grassland mix will be used, comprising more robust species suited to wetter soils and occasional inundation.
11.20	New hedgerows consisting of native species mixes which reflect the character of existing field patterns and woodland blocks will also help improve habitat connectivity by linking fragmented ecological corridors. This will support local wildlife populations and improve the resilience of the landscape to environmental change.
11.21	In the long term, a Greenway Biodiversity and Landscape Management Plan will guide the care and maintenance of planted areas. This will ensure that mitigation measures establish effectively, continue to function as intended, and contribute positively to the character and visual quality of the greenway over time.
11.22	All new planting will be subject to regular inspection and maintenance by the approving authority. This will include weed control, mulching, and replacement of any planting failures to ensure the successful establishment of hedgerows, woodland blocks, and other vegetation.

No.	Description
11.23	Particular attention will be given to areas of natural regeneration on embankments and earthworks. These areas will be monitored to ensure adequate vegetation cover is achieved and maintained. Where establishment is patchy, slow, or dominated by undesirable species, selective intervention will be undertaken, including overseeding or localised planting, to secure a stable and visually appropriate outcome.
11.24	Beyond the initial establishment period, long-term monitoring will be carried out at regular intervals as part of the greenway's management framework overseen by the Local Authorities. This will help ensure that the scheme continues to meet its landscape and ecological objectives and adapts appropriately to environmental or management changes over time.
11.25	The greenway will benefit from a comprehensive suite of operational phase mitigation and enhancement measures. The proposed planting, detailed in the Landscape Mitigation Plans in EIAR Volume 3 (Drawings: 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001 to 0031) will screen and soften views of the route, particularly in sensitive or exposed locations. The planting strategy has been designed to contribute to biodiversity net gain, re-establish traditional field patterns, and reinforce existing landscape character.

1.13 Mitigation and Monitoring Measures for Cultural Heritage

The table below details the mitigation and monitoring measures identified in Chapter 15, Cultural Heritage.

Table 1-12 - Mitigation and Monitoring Measures relating to Cultural Heritage

No.	Description
Mitigation Measures – Construction Phase	
12.1	A detailed programme of archaeological test excavation will be carried out in all greenfield areas (including riverside) within the proposed development boundary well in advance of construction. This will involve the excavation of a centreline test-trench, with off-sets placed at regular intervals. The quantity of testing will, where conditions allow, typically represent a 12% sample coverage of the area being tested. Archaeological testing will be carried out by a team (or teams) of suitably qualified archaeologists, under Ministerial Direction or otherwise in accordance with the statutory requirements of the NMS of the DHLGH at the time of the works. The purpose of this blanket-testing strategy is to help determine the location, date, nature and extent of any previously unknown archaeological features, deposits, or finds. On the basis of the test excavation results, further mitigation may be sought by the National Monuments Section in the form of additional test excavation, preservation in situ (by avoidance or design) or preservation by record by archaeological rescue excavation.
12.2	Where sites of archaeological significance are identified, due regard will be given to the feasibility of preserving such remains in-situ. Where preservation *in-situ* is not deemed feasible, all features of agreed archaeological significance will, subject to ministerial directions, be preserved by record (by means of archaeological excavation, post-excavation analysis, reporting and dissemination). The testing strategy will have regard for the Guidelines for the testing and mitigation of the wetland archaeological heritage for national road schemes (NRA 2005).
12.3	A detailed survey will be undertaken along the disused railway line (CH056) where it survives within the proposed development. This will be carried out by a suitably qualified cultural heritage specialist and will take place prior to construction commencing and after any necessary clearance of vegetation within the rail corridor. The survey will comprise a full photographic and written record (with scaled photographs) of the railway line and its associated infrastructure (e.g. culverts, bridges, stone revetments / embankments, gates and gate posts). The location of each feature will be recorded using GPS equipment.
12.4	The bridge remains at CH056.49 (Sessiagh View) will be recorded as part of the railway heritage survey.
12.5	The earth and stone embankments will be retained (except where required to facilitate the design construction) and the trees/vegetations only cut back where necessary.
12.6	The stone gate posts and iron gates, with their flanking stone walls will be reused or reinstated within the proposed development where possible.

No.	Description
12.7	Where existing bridge structures require repair (e.g. partly collapsed parapet wall of the road bridge in Navenny townland, CH056.52), this shall be in keeping with the 19th century form and fabric to ensure a consistency of design and to retain the historic character and shall be agreed in consultation with the TII Project Archaeologist and Donegal County Council Heritage Officer.
12.8	The form of the new deck structure to be supported by the 19th century piers in the River Finn (CH05.53) has been chosen to echo the old railway viaduct which was of similar construction. In order to minimise the impact to the existing piers, the deck will be articulated with bearings at each pier and at the end abutments, the northern of which is the original abutment from the old railway bridge. The southern abutment (where the original does not survive) will be reinforced concrete abutment wall and bankseat.
12.9	Any necessary archaeological monitoring and inspection work required along the proposed development will take place during the site preparation / advanced works phase of the project. All archaeological monitoring will be carried out under Ministerial Direction or otherwise in accordance with the statutory requirements of the NMS of the DHLGH at the time of the works. This will include monitoring of soil clearance along selected sections of the disused railway line (CH056) to record samples of surviving rails and tracks prior to their removal. Suitable sections of the disused railway line, where there is higher potential for the survival of these elements, will be identified during the industrial heritage survey. Monitoring of ground disturbance at the sites of the three halts (CH049, CH056.17, CH056.67) will also take place to record any surviving subsurface remains.
12.10	Prior to construction commencing, a full written and photographic record of all extant and intact townland boundaries to be impacted by the works will be carried out by a suitably qualified cultural heritage specialist. Where a townland boundary requires removal, archaeological monitoring will be undertaken and the impacted sections recorded.
12.11	The outbuildings (CH112) in Sessiagh (O'Neill) townland will be recorded with photographs, measured drawings and written description, and the record submitted to the TII Project Archaeologist and the Donegal County Council Heritage Officer.
12.12	Cultural heritage issues will be resolved at the pre-construction and construction stages of the development. This will include any necessary archaeological monitoring, survey, building recording, and inspection work required along the proposed development during the site preparation / advanced works phase of the project. This is in accordance with the TII Code of Practice for Archaeology, 2017. During the construction phase, a mechanism for recording, protecting and (where necessary) resolving any newly revealed sites within the proposed development boundary will have to be agreed with the TII Project Archaeologist and the National Monuments Service of the DHLGH.
12.13	If features are to be left in-situ, detailed plans shall be prepared by the Project Archaeologist as to the layout and extent of these features/ sites as well as a geographical location. Before and after photographs will be required as well as a full report on the preservation of the site and how this was achieved. This will be submitted to the National Monuments Service.
12.14	In accordance with TII policy on all road and greenway schemes, the results generated from archaeological investigations on the Proposed Scheme will be made freely and publicly available. The enhanced dissemination of information is a key part of TII's policy with regard to archaeology and can help in promoting a greater awareness of the past among local communities. As such, the results will be communicated at intervals throughout the project and at its conclusion, through a variety of means, including public open days, the presentation and publication of academic and community papers, and digital story maps. The technical reports will be uploaded to the TII Digital Heritage Collection.
Mitigation Measures – Operational Phase	
12.15	Informative or interpretative signage highlighting the history and heritage of the area will be installed at appropriate locations along the proposed development and shall incorporate any significant or interesting findings from the archaeological investigations. The signage will include the history of the Donegal Railway and it is recommended that further consultation take place with the Donegal Railway Heritage Museum, to benefit from their knowledge and expertise in this area.

1.14 Mitigation and Monitoring Measures for Material Assets and Land (Agricultural Properties)

The table below details the mitigation and monitoring measures identified in Chapter 16, Material Assets and Land (Agricultural Properties):

Table 1-13 - Mitigation and Monitoring Measures relating to Material Assets and Land (Agricultural Properties):

No.	Description
Mitigation Measures – Construction Phase	
13.1	Following the completion of relevant construction works, lands temporarily acquired will be reinstated to existing agricultural condition. Measures will be considered on a site-by-site basis, subject to proposed construction works. Where construction compounds will involve installing a hard-core surface it will be necessary for topsoil to be removed and stored. Where new access is proposed affecting existing property boundaries these will be reinstated on a like for like basis. This may require storage of stone wall material during construction or replanting of hedgerow / trees, as required. Please refer to drawings 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001 – 0031 - Landscape Mitigations Plans in Volume 3 of the EIAR.
13.2	Temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with 'BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations'.
13.3	The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the Environmental Clerk of Works (ECoW) in consultation with the Arboriculturist. Existing land boundaries will be retained.
13.4	Where minor vegetation removal within hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction.
13.5	Good communication between the contractor and adjacent landowners during the construction phase, especially when excessively loud activities are programmed, will prevent undue disturbance to farm animals due to noise. It will also facilitate farm enterprises so that livestock can be moved away from the construction work during critical times.
13.6	Measures to control the production of dust will be put in place by the contractor (refer to Chapter 11 Air Quality in Volume 2 of this EIAR). Good communication between the contractor and landowners in the proximity of construction activities will facilitate on-going farm enterprises so that livestock may be kept as far as possible from the construction work during critical times.
13.7	Where farm division has occurred, temporary access across the proposed construction works corridor will need to be maintained on farms until such time as permanent alternative access is provided. Access will be restored, as soon as possible, to lands where it is removed or restricted by the proposed project. The location of such access will be at a suitable location and, where possible, with the agreement of the landowner. Good communication between individual farmers and the contractor will minimise difficulties caused by the restriction of access to land. Temporary fencing will be erected as required to delineate the site boundary and to minimise disturbance to adjacent lands.
13.8	In cases where drainage is impeded during construction and causes obvious difficulty to a particular landowner, temporary measures will be considered on a site-specific basis. This may include allowing waters to drain to less critical areas, so as to minimise the impact.
13.9	Where required, an alternative source of water / electricity will be provided to ensure that disruption to farming is minimised during the construction phase.
Mitigation Measures – Operational Phase	
13.10	For landowners with land on either side of the greenway, accesses will be provided as required for crossing movements of machinery and animals, on a like for like basis. The default gate type that is to be provided is a single field gate per TII standard CC-SCD-00309. Gates will be hung on opposite piers either side of the greenway, and when opened, will temporarily close off the greenway to allow the landowner to cross (from Section 4.3.5 of Chapter 04 Description of Proposed Development). The location of such field access gates will be at a suitable location and, where possible, with the agreement of the landowner.

No.	Description
13.11	Permanent boundary treatment along agricultural lands will consist of a stockproof boundary that is comprised of one of the following: • Timber post and tension mesh wire (per TII standard CC-SCD-00320). • Timber post and rail fencing (per TII standard CC-SCD-00301).
13.12	The new drainage system will be designed to ensure that there will be no increased risk of flooding as a consequence of the proposed project.
13.13	Any services that are interfered with as a result of the proposed project will be repaired / replaced without unreasonable delay.
13.14	Ducting for the restoration of water and power supply services will be provided, as necessary.
13.15	Screening will be provided, where required, to mitigate the noise and visual effects of construction works and operational traffic. Please refer to drawings 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001 – 0031 - Landscape Mitigations Plans in Volume 3 of the EIAR.

1.15 Mitigation and Monitoring Measures for Material Assets and Land (Non-Agricultural Properties)

The table below details the mitigation and monitoring measures identified in Chapter 17, Material Assets and Land (Non-Agricultural Properties).

Table 1-14 - Mitigation and Monitoring Measures relating to Material Assets and Land (Non-Agricultural Properties)

No.	Description
Mitigation Measures – Construction Phase	
14.1	Following the completion of relevant construction works, lands temporarily acquired will be reinstated where necessary. Please refer to drawings 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001 – 0031 - Landscape Mitigations Plans in Volume 3 of theEIAR.
14.2	Timing of works and noise and vibration limit values are amongst the main measures to mitigate noise impacts on sensitive receptors. These measures are detailed within Chapter 13 Noise and Vibration in Volume 2 of this EIAR. Prior to construction and subject to written agreement with the relevant property owners, property condition surveys will be undertaken in relation to all buildings / structures in use located within 50 metres of the extents of the land-take boundary. Good communication between the contractor and property owners during the construction phase will prevent undue disturbance due to noise.
14.3	Dust suppression measures to mitigate the production of dust are detailed within Chapter 11 Air Quality in Volume 2 of this EIAR. Good communication between the contractor and property owners during the construction phase will prevent undue disturbance due to dust.
14.4	Access will be maintained to all affected property as much as possible and if interrupted will be restored without unreasonable delay. Traffic management measures will be put in place during construction where temporary or minor diversions are required.
14.5	In cases where drainage is impeded during construction and causes obvious difficulty to a particular property owner, temporary measures will be considered on a site-specific basis. This may include allowing waters to drain to less critical areas, so as to minimise the impact.
14.6	Where required, an alternative source of water / electricity will be provided to ensure that disruption is minimised during the construction phase. Utilities are dealt with separately in Chapter 18 of the EIAR.
Mitigation Measures – Operational Phase	
14.7	Access will be reinstated to all affected properties without unreasonable delay.
14.8	Where part of the curtilage of a property is to be permanently acquired, the acquiring authority will hold discussions with the property owner and generally agree to replace boundaries on a like-for-like basis where possible, subject to safety considerations.

No.	Description
14.9	Any services that are interfered with as a result of the proposed development will be reinstated without unreasonable delay.
14.10	The new drainage system will be designed to ensure that there will be no increased risk of flooding as a consequence of the proposed development.

1.16 Mitigation and Monitoring Measures for Material Assets (Utilities)

The table below details the mitigation and monitoring measures identified in Chapter 18, Material Assets (Utilities).

Table 1-15 - Mitigation and Monitoring Measures relating to Material Assets (Utilities)

No.	Description
Mitigation Measures – Construction Phase	
15.1	Appropriate measures will be implemented to minimise any interference with water and energy supplies, and the Contractor shall monitor these supplies where necessary;
15.2	Where service diversions and/or realignment are required, or where new connections are proposed, the works shall be carried out in accordance with the requirements of the relevant service provider/authority (for example, ESB and Uisce Éireann);
15.3	Prior to the commissioning of the proposed development, new connections will be tested by a suitably qualified person using an appropriate methodology approved by the relevant service provider;
15.4	Any damage to properties, built services, and other infrastructure (including, but not limited to, property boundaries, fences and access gates, septic tanks, sewers, and utility cables) shall be reported immediately to the property owner, relevant authority, and/or service provider, and work shall not continue in proximity to damaged material assets until appropriate investigations have been carried out by the relevant property owner, authority, and/or service provider, and until the area is cleared and deemed to be safe for works. Then, alternative service supplies will be provided to the affected receptors, and immediate remedial works will be undertaken or, where relevant, monetary compensation in lieu of the works will be made to affected property owners or relevant service providers;
15.5	Suitable cable- and pipe-locating devices shall be used in conjunction with any available plans and drawings identifying underground built services, in order to determine their position as accurately as possible. These devices will be checked regularly and maintained in good working order;
15.6	Safe digging practices will be undertaken in accordance with HAS's 'Code of Practice for Avoiding Danger from Underground Services' (2010);
15.7	Construction staff will be adequately trained and instructed on appropriate work methods, including, where relevant, SSWPs. Construction staff responsible for handling locating devices will be required to possess a Construction Skills Certification Scheme (CSCS) card in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2006;
15.8	Where underground built services are identified, the surface of this area will be marked with a waterproofed material which shall be removed upon the completion of excavation works, as far as possible. Should the surface comprise grassed or unsurfaced areas, suitable wooden pegs laid at an appropriate depth will be used instead;
15.9	Works in proximity to overhead powerlines will adhere to best practice measures detailed in ESB 'Code of Practice for Avoiding Danger from Overhead Electricity Lines' (2019); and
15.10	The Contractor's CEMP will include emergency procedures to be implemented in the event of accidental damage to material assets which may result in safety risks, such as overhead or underground powerlines.
15.11	The Contractor's CEMP will also include best practice site management measures included in the Construction Industry Research and Information Association's (CIRIA) 'Environmental Good Practice on Site Guide (fifth edition)' (C811) (2024), such as: • Measures aimed at ensuring the efficient use of energy onsite and reducing unnecessary energy consumption. These include energy efficient housekeeping practices, measures to be incorporated

No.	Description
	into the design of proposed construction lighting, and measures for the efficient use of construction plant, machinery, equipment, tools, and site vehicles. For example: selecting appropriate machinery; ensuring construction plant is kept in good condition and regularly serviced; and training construction staff in advance to use plant equipment efficiently. In addition, it also provides measures to design an efficient lighting plan for construction sites; • Where required by site constraints, smaller or specialised plant may be utilised to reduce risk of interaction with utilities; • Should excavation works be required for the connection of services, surface water management measures to avoid or reduce the potential for impacts on environmental receptors and drainage networks; and • Measures aimed at ensuring the efficient use of water and reducing water consumption, such as using, where possible, alternative water resources (for example, rainwater reservoirs).
Preconstruction phase	
15.12	During the pre-construction phase, the Contractor shall obtain plans and up-to-date drawings from service providers and complete appropriate investigations/surveys to accurately locate built services (including buried and above ground infrastructure) within the ZoI. Where built services are identified within or in close proximity to areas of construction, a site-specific risk assessment will be undertaken and appropriate mitigation measures will be implemented to avoid or reduce the risk of accidents that could cause damage to utilities and/or to avoid damage to utilities and associated safety risks (for example, identifying appropriate work methods to be implemented during excavation works). This will include, where appropriate, the use of relevant Safe System of Work Plans (SSWP). Any utilities to be diverted will comply to guidelines below: • Irish Water Code of Practice for Water Infrastructure. • Irish Water Code of Practice for Wastewater Infrastructure. • Gas Network Ireland Code of Practice. All works involving ESB infrastructure will be carried out in accordance with ESB code of practice and Health and Safety requirements to minimise risk of disruption. All built services will be assumed to be functional until disconnected and proved to be safe, and the Contractor shall obtain written confirmation of disconnection from the relevant service provider prior to the commencement of any works. In the event that planned outages are required, reasonable prior notice will be given to residents/sites impacted by this outage, as well as an estimation of the duration and times of service disruptions. The disruption to services will be carefully planned to minimise their duration. In addition, the Contractor shall obtain all necessary connection/discharge licences/permissions from the relevant authority/service provider, whether these are permanent or temporary for the construction phase.
Mitigation Measures – Operational Phase	
15.12	Routine inspection and maintenance of the greenway route and associated ancillary infrastructure will be undertaken in accordance with the Management and Maintenance Plan included as part of the CEMP. These activities will ensure that infrastructure connections remain functional and that any defects or service-related issues are identified and addressed promptly.

1.17 Mitigation and Monitoring Measures for Major Accidents and Disasters

The table below details the mitigation and monitoring measures identified in Chapter 19, Major Accidents and Disasters.

Table 1-16 - Mitigation and Monitoring Measures relating to Major Accidents and Disasters

No.	Description
Mitigation Measures – Construction Phase	
16.1	Mitigation relating to impact on Critical Infrastructure: • All utility services near the proposed development have been identified. • Consultations have been undertaken with all known service providers and their requirements have been identified and incorporated into the design.

No.	Description

	• Where there is interaction between the proposed development and existing infrastructure, the locations of the interactions have been identified and planned for, and therefore, the potential for any service disruption is limited.
	• Where interactions are located with the proposed development, these utilities will undergo re-location or diversion works appropriately and as required at the detailed design stage.
	• The exact locations of the medium pressure gas mains have been determined by surveys which have informed the preliminary design.
	• Any utilities to be diverted will comply to guidelines below:
	  ○ Irish Water Code of Practice for Water Infrastructure.
	  ○ Irish Water Code of Practice for Wastewater Infrastructure.
	  ○ Gas Network Ireland Code of Practice.
	• All works involving ESB infrastructure will be carried out in accordance with ESB code of practice and Health and Safety requirements to minimise risk of disruption.

16.2	Mitigation relating to Collapse / Damage to Structures: The design of the proposed development will comply with design standards that include, but are not limited to, the following: • EN 1990 Eurocode - Basis of structural design • EN 1993 Eurocode 3. Design of steel structures • EN 1993-1 Design of steel structures. General rules and rules for buildings • Degree of impact protection. The design of the proposed development will comply with material standards to include, but are not limited to, the following: • I.S. EN 1992-1-1:2005 (Eurocode 2, Part 1-1) – Design of concrete structures – General rules and rules for buildings. • I.S. EN 1993-1-1:2005 (Eurocode 3, Part 1-1) – Design of steel structures General Rules and rules for buildings. • I.S. EN 1996-1-1:2005 (Eurocode 6, Part 1-1) – Design of masonry structures. General Rules for reinforced and unreinforced masonry structures. • A Construction Environmental Management Plan (CEMP) and an Incident Response Plan (IRP) will be prepared by the successful contractor to manage the risk of collapse / damage to structures.
16.3	Mitigation relating to Building Failure / Fire: • All construction compounds and construction sites will have appropriate fencing. • Flammable inventory on site will be kept to a minimum and stored securely, away from ignition sources
16.4	Mitigation relating to Asbestos: • Prior to any works, demolition surveys will be carried out. • In buildings where traces of asbestos have been found, a remedial strategy will be developed prior to any construction and demolition works.
16.5	Mitigation relating to Works near surface and groundwater bodies: • Preliminary assessments of the geotechnical risks associated with the proposed development will be developed during detailed design.
16.6	Mitigation relating to Extreme Weather (Flooding) Events: • As is normal practice with infrastructure projects, an Environmental Operating Plan (EOP) and CEMP will be prepared by the successful contractor for the proposed development. An Incident Response Plan will be prepared as part of the CEMP detailing the procedures to be undertaken in the event of an extreme weather event including but not limited to flood events. • Monitoring of weather forecasts to ensure that necessary actions will be implemented in time at construction sites prior to prolonged / extreme weather events. • Monitoring of water levels in watercourse, specifically the River Finn and River Eske. • Siting of construction compounds, earthworks and materials will be planned to minimise the potential for surface water runoff or contaminants entering watercourses, particularly during extreme weather events. A CEMP will be prepared detailing the procedures to be undertaken in the event of extreme weather (flooding) events.

No.	Description
16.7	Mitigation relating to Groundwater Contamination: • Local Authorities and landowners have been consulted to identify any private boreholes / wells within 1km of the proposed development. • Further geophysical surveys and ground investigation surveys will be undertaken during detailed design stage prior to construction. • All concrete to be brought to site ready-mixed. RA including measures to prevent discharge of contaminated water to subsoil/groundwater to be completed. • Use of barriers and material quantity records to reduce risk of contamination.

16.8	Mitigation relating to Spillage or long-term seepage of pollutants into a watercourse:
	• Design mitigations include single clear span structures over river channels to avoid instream works and silt mitigation measures, reducing the risk of accidental spillage or long-term seepage or long-term spillage of pollutants into a watercourse during construction. Post-construction water quality monitoring programme shall be developed.
	• As is normal practice with infrastructure projects, an EOP and CEMP will be prepared for the proposed development which will detail measures to be taken on site, such as secondary containment for storage of fuel. An Incident Response Plan will be prepared as part of the CEMP detailing the procedures to be undertaken in the event of spillage of chemical, fuel or other hazardous wastes, non-compliance with any permit or license, or other such risks that could lead to a pollution incident, including flood risks.
	• As is normal practice with infrastructure projects, an EOP and CEMP will be prepared for the proposed development which will detail measures to be taken on site, such as secondary containment for storage of fuel. An Incident Response Plan will be prepared as part of the CEMP detailing the procedures to be undertaken in the event of spillage of chemical, fuel or other hazardous wastes, non-compliance with any permit or license, or other such risks that could lead to a pollution incident, including flood risks.
	• The Site Environmental Manager will prepare Method Statements for construction works as detailed in the EOP to be undertaken on, over or near water in consultation with Inland Fisheries Ireland (IFI) and other relevant authorities.
	• Implementation of mitigation measures identified in Chapter 7 Biodiversity, Chapter 8 Land and Soils, Chapter 9 Hydrology, and Chapter 10 Hydrogeology in EIAR Volume 2.
	• During construction, the following guidance will have to be adhered to for construction work on, over or near water:
	  ○ *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites* (Eastern Regional Fisheries Board)
	  ○ *CD 529 Standards for Highways Design Manual for Roads and Bridges*
	  ○ *Standard for Highways: Design of Outfall and Culvert Details*
	  ○ *Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers.*
	  ○ *CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors.*
	  ○ *CIRIA C648 Control of Water Pollution from Constructional Sites.*
	  ○ *CIRIA C753 The SuDS Manual*
	  ○ *CIRIA C698 Site Handbook for the Construction of SuDS*
	  ○ *Construction, Replacement or Alteration of Bridges and Culverts: A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945*
	  ○ *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes*
	  ○ *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters*

16.9	Mitigation relating to Animal and Plant Disease: • Ecological site surveys have been carried out along the extents of proposed development to identify any invasive species present. Invasive species which are listed on the Third Schedule of the Birds and Natural Habitats Regulations have been identified within the construction work areas. • Invasive species management plan as part of the CEMP has been developed, detailing how the introduction or spread of invasive species will be prevented.

No.	Description
Mitigation Measures – Operational Phase	
16.10	Mitigation in relation to Bridge Failure: • All structures have been designed to be fully compliant with: ○ Eurocode I.S. EN 1990 Basis of structural design. ○ Eurocode I.S. EN 1991-2 *Actions on structures – Part 2: Traffic loads on bridges (Including Irish National Annex)*. ○ Eurocode I.S. EN 1991-1-7 Actions on structures – Part 1-7: General actions Accidental actions (Including Irish National Annex). ○ I.S. EN 1992-2 *Design of concrete structures – Concrete bridges – Design and detailing rules (Including Irish National Annex)*. ○ EN 1990 Eurocode - Basis of structural design. ○ EN 1993 Eurocode 3. Design of steel structures. ○ EN 1993-1 Design of steel structures. General rules and rules for buildings. ○ Degree of impact protection. Compliance with material standards to include, but are not limited to, the following: • I.S. EN 1992-1-1:2005 (Eurocode 2, Part 1-1) – Design of concrete structures – General rules and rules for buildings. • I.S. EN 1993-1-1:2005 (Eurocode 3, Part 1-1) – Design of steel structures General Rules and rules for buildings. • I.S. EN 1996-1-1:2005 (Eurocode 6, Part 1-1) – Design of masonry structures. General Rules for reinforced and unreinforced masonry structures.
16.11	Mitigation in relation to Members of the public falling or jumping from overbridges: The design of new bridge complies with the regulatory requirement for safety of pedestrians as detailed in TII's DMRB DN-REQ-03034 The Design of Road Restraint Systems (Vehicle and Pedestrian) for Roads and Bridges. The new overbridge structures will include parapets..
16.12	Mitigation in relation to Mass Wasting: • Minimization of earthworks • Use of floating pavement on soft ground • Use of cut materials for embankments, avoiding soil material import/export During the operational phase, repeat geological inspections of the mountainside above the abandoned rail line through Barnesmore Gap will be carried out every 5 years to monitor the stability and safety of the mountain slope, and any necessary further stabilisation measures will be carried out to ensure the ongoing safety of the greenway.
16.13	Mitigation in relation to Extreme Weather (Flooding) Events: • New infrastructure has been designed to include allowances for climate change, including extreme weather events and flood risk. • Drainage design includes allowances for climate change.

1.18 Mitigation and Monitoring Measures in the Natura Impact Statement

The table below details the mitigation and monitoring measures identified in the Natura Impact Statement.

Table 1-17 - Mitigation and Monitoring Measures relating to the Natura Impact Statement

No.	Description
17.1	General Construction Phase Mitigation • The contractor will appoint a suitably qualified Ecological Clerk of Works (ECoW) for the duration of the construction contract to ensure that the mitigation and monitoring proposed in this Chapter are implemented during the construction phase. The ECoW must possess training, experience and knowledge appropriate to the role, including:

No.	Description
	○ An NFQ Level 8 qualification or equivalent or other acceptable qualification in an ecological discipline; and, ○ Demonstrable appropriate practical experience as an ECoW in the protection of European sites. • Prior to any site clearance, excavation, or construction, a Construction Environmental Management Plan (CEMP) will be produced by the successful contractor(s). The CEMP will set out the Contractor's overall management and administration of the construction phase. The CEMP will be developed by the Contractor during the pre-construction phase, to ensure commitments included in the statutory approvals are implemented. The CEMP has been provided in Volume 4.1 of the EIAR. • The Contractor will prepare a site-specific Method Statement detailing how the works will be carried out. The Foreperson shall read, sign and abide by each site-specific Method Statement. A 'toolbox talk' will be conducted by the ECoW to induct the Works Team on the ecological considerations listed in the site-specific Method Statement by the Foreperson. • The Contractor will appoint a Site Environmental Manager (SEM) prior to the commencement of works. This person shall be responsible for carrying out environmental monitoring of the works and ensuring that the mitigation measures proposed in this report (as well as the CEMP and site-specific Method Statements) are adhered to. • Construction is limited to the hours of 08:00-18:00 Monday to Friday with reduced hours on Saturday (08.00 – 14.00) and that the site will be closed on Sundays and during public holidays. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of Donegal County Council. Works shall not be permitted on Sundays or Bank Holidays. Standard construction hours being limited to daylight hours reduces impacts associated with noise, lighting and vibration during the hours when mammals are typically active and foraging. • Temporary compound fencing will be erected prior to the commencement of works to function as tree protection fencing and to prohibit any works within the Root Protection Areas (RPAs) identified by the project Arboriculturist. All tree protection fencing will comply with 'BS 5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations' (BSI, 2012). • The compound fencing will be set back from existing hedgerow and treeline boundaries to avoid habitat loss and protect retained vegetation. The required stand-off distance, including the extent of Root Protection Areas, will be determined by the Environmental Clerk of Works (ECoW) in consultation with the Arboriculturist. Existing land boundaries will be retained. Where minor vegetation removal within hedgerows is required to 'punch through' for access on a compound site, these areas of cleared hedgerow will be replanted following completion of construction.
17.2	Water Quality Mitigation Measures • All surface water runoff will be directed to existing watercourses. Where existing drains are not available, new shallow v-ditches will be constructed which will convey surface water to the nearest watercourse. No new outfalls will be constructed in the River Eske. Attenuation will be provided at the trailheads which will ensure that surface water runoff does not exceed greenfield runoff rates. • During construction, the following guidance documents for construction work on, over or near water will be adhered to: ○ *C532 Control of water pollution from construction sites: guidance for consultants and contractors (CIRIA, 2001)* ○ *Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers.* ○ *CIRIA C648 Control of water pollution from linear construction projects: technical guidance (CIRIA, 2006)* ○ *Construction, Replacement or Alteration of Bridges and Culverts: A Guide to Applying for Consent under Section 50 of the Arterial Drainage Act, 1945 (OPW, 2019)* ○ *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2005c)* ○ *Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (IFI, 2016)* ○ *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board)* • Where construction is located within 50m of a watercourse the Contractor shall: Prior to commencement of works the contractor shall prepare a site-specific work plan work plan that includes:

No.	Description
	○ Drawings of planned works, machinery access corridors of corridors, haul roads, delivery areas, concrete batching and wash out areas and wheel wash areas, environmental constraints and mitigation measures to address such; ○ A method statement; ○ An emergency response plan in case of accidental spillages; ○ The ECoW and the SEM will approve the site-specific work plan.
17.3	Hydrocarbons and other chemicals • All vehicles and plant shall be refuelled off-site. • All fuelling of machinery shall be undertaken on an impermeable base in bunded areas at least 50m from a watercourse, drain or ditch. • All fuelling equipment shall be regularly inspected and serviced. • Any petrol- or diesel-fuelled pumps or other machinery shall be located within temporary bunded units. • All fuel, oils, chemicals, hydraulic fluids, on-site toilets etc. shall be stored in access-controlled areas on the construction site compound, on an impermeable base which shall be bunded to 110% capacity, appropriately secured and shall be located away from drains, watercourses or other sensitive areas. • All plant and construction vehicles shall be inspected daily for oil leaks and a full-service record shall be kept for all plant and machinery. • Maintenance and repairs shall be undertaken on an impermeable surface located at least 50m from a waterbody, drain or ditch, • All construction plant (pumps, compressors, generators etc) shall be provided with adequately sized spill trays. • Spill kits shall be available on-site. • Spill kits shall be provided at all refuelling points and fuel/chemical storage areas. • Staff shall be trained in the use of spill skits and spill kits. • All soils contaminated by spills shall be treated on-site. Where this is not feasible contaminated soils will be removed to a suitably licenced disposal facility. • All waste oils, empty oil containers and hazardous wastes shall be disposed of in accordance with the Waste Management Act, 1996 (as amended).
17.4	Site Access and Vehicle Movements • Temporary haul roads shall be constructed between earthworks and the river. • The subgrade of haul roads shall be prepared by light compaction. A geotextile underlay shall be installed. • A 100-200mm deep granular surface shall be provided at haul roads. • A 2-3% cross fall shall be provided away from the river. Swales shall be provided to direct runoff from haul roads away from the river to settlement cells. • Clean water diversions (swales or interceptor ditches shall be provided upslope of excavated areas to divert flows around excavated surfaces to prevent run-on. • A continuous perimeter bund shall be provided at the downslope edge of excavated areas. • Wheel wash areas shall be located near the site exit on an impermeable surface. • All vehicles shall pass through wheel wash area before exiting the site. • The wheel wash area bunds and settlement tanks shall be inspected daily and repaired as required. • Sludge from settlement tanks shall be periodically removed and disposed of at an appropriately licensed facility. • All fuelling of machinery shall be undertaken on an impermeable base in a bunded area at least 50m from the edge of the river. • All fuels, oils, hydraulic fluids and construction chemical shall be stored be stored in access-controlled areas. • Fuel and chemical storage areas shall have bunded impermeable base and shall be located away from drains, watercourses or other sensitive areas. • Spill kits shall be provided at all refuelling points and fuel/chemical storage areas. • All fuelling equipment shall be regularly inspected and serviced.

No.	Description
	• All construction plant (pumps, compressors, generators etc) shall be provided with adequately sized spill trays. • All plant and construction vehicles shall be inspected daily for oil, fuel and hydraulic fluid leaks and a full-service record shall be kept for all plant and machinery. • Maintenance and repairs of plant & and vehicles shall be undertaken on an impermeable surface located at least 50m from a watercourse, drain or ditch. • The works area (including site compounds) will be limited to the minimum required to undertake the necessary elements of the proposed development.
17.5	Concrete Works The use and management of concrete in or close to watercourses must be carefully controlled to avoid spillage which has a deleterious effect on water chemistry and aquatic habitats and species. As the use of concrete cannot be avoided, the following control measures will be employed: • Hydrophilic grout and quick-setting mixes or rapid hardener additives shall be used to promote the early set of concrete surfaces exposed to water. • When working in or near the surface water and the application of in-situ materials cannot be avoided, the use of alternative materials such as biodegradable shutter oils shall be used. • Any plant operating close to the water or water-dependent habitat such as bogs, will require special consideration on the transport of concrete from the point of discharge from the mixer to final discharge into the delivery pipe (tremie). Care will be exercised when slewing concrete skips or mobile concrete pumps over or near surface waters and bogs. • Placing of concrete near watercourses will be carried out only under the supervision of the Ecological Clerk of Works (ECoW). • The weather forecast will be consulted prior to commencing concrete pours. No such works will be undertaken if inclement weather is forecast such that precipitation may make it difficult to maintain a dry working area. • There will be no spills of concrete, cement, grout or similar materials hosed into surface water drains. Such spills shall be contained immediately, and runoff prevented from entering watercourses. • Concrete waste and wash-down water will be contained and managed on site to prevent pollution of all surface watercourses. • On-site concrete batching and mixing activities will only be allowed at the identified construction compound areas. • Washout from concrete lorries, with the exception of the chute, will not be permitted on site and will only take place at the construction compound (or other appropriate facility designated by the manufacturer). • Chute washout will be carried out at designated locations only. These locations will be signposted. The Concrete Plant and all Delivery Drivers will be informed of their location with the order information and on arrival to site. • All concrete washout shall occur at designated washout areas on bunded impermeable surfaces. • Concrete washout areas shall be located at least 50m from a watercourse, ditch, drain or sensitive habitat. • Concrete washout areas shall be inspected daily for leaks and overflows. • Chute washout locations will be provided with a suitably sized, contained impermeable area. This area can be a portable skip or lined excavation. The contents of the cement washout area will be disposed of offsite in accordance with the Contractor's Waste Management Plan. • Hardened concrete waste will be removed and disposed of at an appropriately licenced facility.
17.6	Sedimentation and surface water run-off Where earthworks are required within 30m of a waterbody, such as at the various watercourse crossings, areas in proximity to watercourses not being crossed, adjacent to Lough Eske and adjacent to Lough Mourne, the following erosion, sedimentation and drainage controls shall be adopted: • Prior to earthworks commencing, all ditches and drains shall be temporarily culverted to avoid movement of vehicles across watercourses. • Riparian vegetation will be fenced to a minimum distance of 10m from the river's edge. • Where riparian vegetation within 10 m of a rivers edge must be impacted, adequate protection of soils shall be provided using a biodegradable geotextile staked into the ground using wooden pegs until vegetation re-establishes.

No.	Description
	• Areas of bank reinstatement shall be covered with hessian to encourage plant establishment and reduce the risk of soil erosion. The hessian will naturally degrade in-situ as the vegetation grows back. Where it is not possible to reinstate vegetation, efforts shall be made in surrounding areas to offset removal through improvement. The landscape design is presented in Chapter 14 of the EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031 and includes planting which will compensate for minor loss of vegetation. • A geotextile silt fence shall be installed continuously along the downslope perimeter of all disturbed areas adjacent to a watercourse, extending for the full length where soil disturbance occurs. • The upslope area for fence segments shall not exceed 0.1 hectares. • Silt fences shall be anchored by excavating a 150mm wide by 150mm deep trench. The geotextile shall be placed in the trench, and the trench shall be backfilled and compacted to prevent underflow. • Silt fences shall be supported by wooden or steel posts at a maximum of 2m intervals. • The minimum embedment for silt fence posts shall be 450mm. • The geotextile fabric shall be attached to the posts by stapes or steel wire on the upslope side. • The height of the silt fence shall be a minimum of 600mm. • J-hooks will be provided at 30 – 50m intervals. A sediment ponding area will be provided behind each J-hook. • Silt fences shall be inspected daily and after storms. Runs of sagging fence shall be tensioned and the silt fence re-anchored as required. • Silt fences will be cleaned when sediment height reaches 1/3 height of the fence. • Sections of the silt fence that are damaged shall be replaced immediately. • Coir logs/strawbales shall be installed in concentrated flow paths and temporary sandbag, or rock check dams shall be constructed at outfalls. • Surface water flowing onto the construction area will be minimised through the provision of berms, diversion channels or cut-off ditches. • Protection of waterbodies and bogs from silt load will be carried out through the use of gully silt/sediment filters and shallow berms in hardstanding areas to provide adequate treatment of runoff to watercourses. • Settlement tanks/ponds, silt traps/bags and bunds will be used. Where pumping of water is to be carried out, filters will be used at intake points and discharge will be through a sediment trap. • Where works are adjacent to waterbodies and water dependent habitats (e.g. bogs), silt fences will be installed around the works boundary to contain any potential silt or sediment run-off. • Compound/storage facilities will be fenced off at a minimum distance of 5m from the top of the edge of the watercourse banks and bogs. Any works within the 10m buffer zone will require measures, such as silt fences, to be implemented to ensure that silt laden or contaminated surface water runoff from the compound does not discharge directly to any watercourse or water dependent habitat. • The construction discharge will be treated such that it will not reduce the environmental quality standard of the receiving watercourses.
17.7	At locations where temporary stockpiling within 50m of a waterbody is unavoidable the following controls shall be adopted: • Sacrificial grips shall be installed to direct runoff to settlement cells prior to treatment/discharge. • Silt fences shall be provided on the stream side of stockpiles at downslope boundaries. • The silt fence shall be set back from the toe by at least 6 m to maintain a ponding/clean-out zone. • Stockpile heights and slope faces shall be greater than or equal to 3 to 1 on faces to minimise the runoff footprint, • Continuous sediment barriers shall be provided around the downslope perimeter using silt fences or gravel bags) • Non-active stockpiles shall be with secured with waterproof woven geotextile covers. These shall cover exposed faces entirely and a minimum of 300mm overlap for seams shall be provided, • Stockpile covers shall be anchored or weighted against wind, • Turbid runoff shall be routed to a settling area (temporary lagoon/tank or vegetated filter strip) before any controlled discharge.
17.8	Concrete Saddling to Masonry Structures over Watercourses The proposed development includes the repair and maintenance of 6 No. existing masonry structures over watercourses, which were built to facilitate the abandoned railway. Of these structures, 1 No. is within the Lough Eske and Ardnamona Wood SAC boundary (Structure Ref.: S01), 2 No. are upstream

No.	Description
	of the Lough Eske and Ardnamona Wood SAC (Structure Ref.: S08 & S09) and 2 No. are upstream of the River Finn SAC (Structure Ref.: S16 & S18). The 6th structure (Structure Ref.: S12) is not within or upstream of any European designated site. All masonry structures, with the exception of S12, will be repaired and upgraded using the concrete saddling method. The concrete saddling method is described in Chapter 04 of the EIAR. The purpose of the concrete saddling method is to avoid in-stream works to the watercourses, particularly in the River Eske at S01 due to the presence of Freshwater Pearl Mussel in the riverbed around the existing bridge piers. Therefore, general water quality mitigation measures, as described above will apply. In addition to the water quality mitigation measures proposed above, where concrete saddling is proposed (i.e., S01, S08, S09, S16 and S18), a Terracurtain screen will be securely anchored to the inside of the working area and shall be installed for the full length of the works on both sides of the masonry bridges for dust suppression. No water will be used for dust suppression on the bridge to prevent water quality impacts associated with surface water runoff. An impermeable membrane will be laid against the soffit walls prior to the pouring of concrete during concrete saddling works. No suspended scaffolding or debris netting is required as all construction works will be undertaken within the footprint of the existing structure. No straw/hay bales or coir logs will be used in the River Eske during construction stage due to the potential for accidental sedimentation to Freshwater Pearl Mussel. Floating silt screens will be used in the River Eske only.
17.9	Construction of Watercourse Crossings (Bridges) The proposed development includes the construction of four new river bridge crossings (S04, S06, S10 and S20). S04 and S06 are within the boundary of the Lough Eske and Ardnamona Wood SAC. S20 is within the boundary of the River Finn SAC. S10 is over the River Lowerymore but not within the boundary of any European designated site. The mitigation measures presented above in relation to water quality protection will apply in all cases. Where bridge foundations are to be constructed, the following additional mitigation shall apply: • Clean water diversions (swales or interceptor ditches) shall be provided upslope of excavated areas to divert flows around excavated surfaces to prevent run-on. • A geotextile silt fence shall be installed continuously along the downslope perimeter of all disturbed areas adjacent to a watercourse, extending for the full length where soil disturbance occurs. • Excavations shall be dewatered by a sump pump and discharged to a settlement tank. • Straw bales, floating silt screens or coir logs shall be installed downstream of works. • Formwork for foundations shall have watertight joints. • Biodegradable shutter oils shall be used. • Suitable debris netting shall be provided beneath the deck and along the banks in front of the proposed new bridge abutments as required to prevent masonry or other materials falling into the channel. Mitigation measures specific to the proposed River Eske Crossing (S04) within the Lough Eske and Ardnamona Wood SAC will also apply, as follows: • The new bridge over the River Eske has been designed as a clear span structure. • The piers are set back 5.8m on the north riverbank and 7.8m on the south riverbank. • The location of the bridge has been selected to avoid Annex I habitats and minimise the loss of seminatural habitats. • A site-specific risk assessment shall be undertaken in consultation with the National Parks and Wildlife Service and the Inland Fisheries Ireland the prior to installing bored pile foundations. • Steel plates or a compacted granular surface underlain by geotextile shall be installed as a drilling/crane platform drilling platforms and drill rig positioning areas. • Environmentally friendly drilling fluids shall be used in preference to Bentonite. • Drilling pumps and mud pumps shall be provided with a bunded, impermeable surface. • Pumps and hoses shall be inspected daily for leaks and repaired/replace as required. • Slurry management operations will be provided with a level, bunded, impermeable surface. • Permanent steel casings shall be installed at boreholes. Mitigation measures specific to the proposed River Finn Crossing (S20) within the River Finn SAC will also apply, as follows: • The new bridge over the River Finn will utilise the existing piers. • Initially, the works site will be established on both sides of the river, and sedimentation and pollution control and monitoring measures will be implemented prior to breaking ground. A triple layer of silt fencing will be installed parallel to the works area, along with interceptor ditches with straw bales

No.	Description
	and settlement ponds. Site clearance will then be carried out to provide sufficient space for the works to be carried out. • The existing abutment will be utilised on the north side of the River Finn, so new substructure foundations are only required on the south side. This will be constructed by excavating to formation level, stabilising using temporary works and dewatering if required. An existing ditch will be piped east of the proposed structure. The concrete pads will then be constructed for the southern abutment and approach span piers. • Machinery required will include excavators and dump trucks (for establishing sedimentation control measures and excavating foundations), concrete trucks and dewatering pumps.
17.10	Mitigations relating to Substructure Base, Abutments and Piers • Once the foundations have been constructed, the southern abutment and approach span piers will be constructed. Initially, shuttering will be erected for the reinforced concrete abutment followed by the installation of reinforcement cages. Concrete will then be poured and allowed to cure the appropriate amount of time. Once fully cured the formwork will be struck and removed. Waterproofing will then be applied to any buried concrete faces to prevent exposure to surrounding ground conditions. Back of wall drainage will be installed at the abutments followed by backfilling and compaction. • Bearing plinths and pads will be installed on the new southern approach span substructure, existing masonry piers and the existing northern abutment. At this point a detailed survey will be undertaken establish the position of the abutment and pier plinth tie-ins. At the same time, off-site fabrication of the steel lattice girders and curved universal beam sections can be undertaken concurrently, as well as a trial erection at the workshop. • Machinery required will include articulated trucks, dump trucks, rollers and compactors (for proper compaction), drainage installation equipment, and a mobile crane (for shuttering, reinforcement and bearing pads).
17.10	Mitigations relating to the Installation of Bridge Deck • Once the substructure is complete, the steel superstructure will be transported to site in segments and erected on the piers/abutments, followed by the erection of the precast concrete deck slabs. There will also be in-situ concrete stitches required to the steel girders. Transportation will be via articulated lorries and low loaders using the temporary accesses created north and south of the river to the adjacent road network. • Once the superstructure is in place, installation of kerbs and parapets will follow, along with waterproofing and surfacing. Paving, drainage, landscaping and finishes will then be installed at the southern end. • On the northern side, construction of the concrete saddle to the masonry arches will take place on northern abutment, followed by installation of precast concrete deck slabs and parapets as described above. Finally, the removal of any temporary pollution control measures will take place once all permanent works are complete, and vegetation is established.
17.11	Construction of Culverts There are 91 No. culverts proposed as part of the proposed development, 10 No. of which are subject to the Section 50 Consent process under the Arterial Drainage Act, 1945. All other culverts not subject to Section 50 Consent are proposed in field ditches that have no suitable habitat for fisheries or aquatic fauna. All culverts will be constructed offline. Offline construction involves creating a new channel and redirecting the watercourse to the new channel once the culvert is completed. The process for constructing the offline culverts is as follows: • Culvert installations shall only take place during the period July to September and the timing of such works will be considered on a site-specific basis and in agreement with Inland Fisheries Ireland and the Loughs Agency. • The offline culverts will be constructed in new channels. The new channels and culverts will be constructed in the dry. Once the new channels and culverts are completed, the existing watercourse will be diverted into the new channel and the former channel will be filled in. • The stream banks will have a slope of at least 1:5 and will be covered with topsoil and coir mats or similar to allow the area to revegetate and prevent erosion or the release of sediment into the stream while vegetation establishes. • Where the watercourse bed is composed of gravels, the new bed will be lined with stone and gravels in a like for like replacement. • When the watercourse is being diverted into the new channel, the downstream end will be opened first, allowing water to fill the channel slowly and prevent a surge of water which could lead to a sediment plume.

No.	Description
	• When the water levels in the new channel have stabilised, the upstream end of the new channel will be opened and the old channel will be closed. • Where there is a risk of sedimentation downstream of the culvert, a mat made of biodegradable material such as sedimat will be fitted at the downstream end of the new channel in accordance with the manufacturer's instructions. A straw bale is sufficient to contain sediment.
17.12	Welfare Facilities Construction compounds will be established along the greenway route at Donegal Town, Biddy's O'Barnes and Ballybofey/Stranorlar. These compounds are to include site offices, worker welfare facilities (e.g. restrooms and shelters), storage space and room for plant and equipment and circulation space. Wastewater drainage from all site offices and construction facilities will be contained and disposed of in an appropriate manner to prevent water pollution and in accordance with the relevant statutory requirements. Given the full and proper implementation of these water quality protection measures, the construction, operation, and maintenance of the proposed development will not give rise to significant effects.

17.13	Disturbance- Protection of Otter and Atlantic Salmon
	• Construction is limited to the hours of 08:00-18:00 Monday to Friday with reduced hours on Saturday (08.00 – 14.00) and that the site will be closed on Sundays and during public holidays. Works other than the pumping out of excavations, security and emergency works will not be undertaken outside these working hours without the written permission of Donegal County Council. Works shall not be permitted on Sundays or Bank Holidays. Standard construction hours being limited to daylight hours reduces impacts associated with noise, lighting and vibration during the hours when Otter are most active.
	• A pre-construction survey will be undertaken by the ECoW two to three weeks prior to construction to ensure that no otters have taken up residence within 150m of the proposed development. Should a holt or couch be found, the ECoW will seek direction from the NPWS and any necessary measures arising shall be completed prior to the commencement of works. Any additional mitigation measures prescribed following the preconstruction survey will comply with Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes (TII, 2006).
	• Any excavations greater than 1m deep will have ramps fitted to allow Otter to escape.
	• Where potential holts are identified, a period of monitoring will be required to determine whether holts are active. If an active holt is discovered, the NPWS will be consulted to establish the best course of action, which may include a licence application to disturb otter.
	• Light spill onto watercourses during hours of darkness has the potential to form a barrier for Otter and Atlantic Salmon. Therefore, the following limits on construction lighting is proposed:
	  ○ Where lighting is required during construction, the lights will only illuminate work areas when necessary and will avoid illuminating any woodland habitats, trees, hedgerows and watercourses outside the required area. Directional lighting will be utilised to minimise light spill into surrounding habitats, including watercourses, treelines, and hedgerows.
	  ○ Construction lighting shall be limited to the minimum area required to be lit and minimise light spill to areas not required for construction.
	  ○ In order to limit any light spill onto watercourses, solid hoarding shall be erected around areas which will be subject to night-time construction activities, subject to approval of the ECoW.
	  ○ Any night-time construction activities that may be required must be approved by the ECoW and DCC before commencement.

17.14	Invasive Species An Invasive Species Control and Management Plan has been prepared and is presented in Appendix G of the Construction Environmental Management Plan, which can be found in Volume 4.1 of the EIAR. Please see the Invasive Species Control and Management Plan for full description of the extent and procedures proposed for the control and management of the invasive species recorded on the site of the proposed development. In order to minimise the risk of the introduction or spread of invasive alien plant species (IAPS) during construction, all works shall be executed in accordance with best practice for biosecurity in construction. In particular, prior to commencement, the Contractor shall prepare a detailed Biosecurity Protocol describing his/her proposed approach to ensuring that IAPS are not imported or spread during the construction of the proposed development. The Contractor's Biosecurity Protocol shall be in accordance with The Management of Invasive Alien Plant Species on National Roads – Standard (TII, 2020a) and The Management of Invasive Alien Plant Species on National Roads – Technical Guidance (TII, 2020b). The Biosecurity Protocol shall include, as a minimum, the following measures to prevent the spread of invasive species:

No.	Description
	• Good construction site hygiene will be employed to prevent the introduction and spread of problematic IAPS (i.e., Japanese knotweed and Himalayan Balsam) by thoroughly washing vehicles prior to leaving any site. • All plant and equipment employed on the construction site (e.g., excavators, piling equipment etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of IAPS. • All washing must be undertaken in areas with no potential to result in the spread of IAPS, as detailed in the Construction Environmental Management Plan. • Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.
Mitigation Measures – Operational Phase	
17.15	Water Quality *Sustainable Urban Drainage Systems (SuDS)* The drainage design for the proposed development will be designed in accordance with the following TII publication standards: • TII DN-GEO-03047 Rural Cycleway Design (Offline & Greenway) – February 2025 • TII DN-DNG-03022 Drainage Systems for National Roads – February 2024 • TII DN-DNG-03064 Drainage of Runoff from Natural Catchments (including Amendment No.1 dated June 2015) – June 2015 • TII DN-DNG-03062 Edge of Pavement Details (including Amendment No.1 dated June 2015) – June 2015 As per TII DN-DNG-03022, the design intent is to achieve the efficient removal of surface water to provide safety, provide effective sub-surface drainage to maximise the lifespan of the pavement and earthworks, and minimise the impact of the runoff on the receiving environment. To achieve those three major objectives, the proposed greenway will utilise: • New over-the-edge drainage ditches for the interception of surface water from the greenway • New pre-earthworks drainage ditches for the interception and diversion of surface runoff from adjacent land away from the greenway. • New filter drains within the verge where the greenway is in cut. • New carrier drains where surface water needs to be conveyed below roads. • Attenuation swales for the attenuation of runoff from the greenway surface. • Pipe or box culverts where the greenway crosses watercourses and field ditches and bridge structures for major watercourse crossings. • If there are any locations where existing ditches can be utilised, these may be incorporated into the drainage design if the capacity within the channels is sufficient. • For the trailheads, the design will include for permeable, flood resilient materials such as Grasscrete or similar porous paving for new areas of car parking and resin bound gravel for new areas of congregating spaces. Additional impermeable surfacing will be minimised and attenuation in the form of swales or basins will be provided. *SuDS – Greenway Drainage Design* • Along the proposed development corridor, drainage will largely consist of over the edge drainage along the length of the development. Along the abandoned railway corridor, existing ditches will be cleaned and regraded if necessary, and additional attenuation swales added to control the runoff to existing watercourses. In offline sections the drainage will be designed to connect to existing watercourses, making use of existing drainage channels as far as possible and providing new attenuation where required. In some areas, pre-earthworks drainage is required at the toe of the embankment to catch runoff from adjacent lands, this will be in the form of filter drains or ditches. Filter drains will also be provided for low points in cut, and carrier drains in situations where the outfall from the swale may have to cross the greenway prior to enable discharge to a watercourse. • Swales are shallow, vegetated ditches designed to manage surface water runoff, prevent erosion, and enhance water quality. These will be installed along the greenway route, particularly in areas where natural drainage solutions are needed. • Infiltration trenches are linear excavations usually filled with permeable granular material, that allows for the temporary storage of water before it infiltrates into the ground. These will be installed along the greenway route where space is constrained and the provision of a swale is not feasible.

No.	Description
	• A crossfall of 2% has been provided along the length of the greenway pavement to facilitate drainage and prevent standing water. Crossfall on verges will be kept to a minimum to allow for infiltration and to limit the overall runoff. • Where the proposed greenway intercepts a watercourse, a pipe, box culvert, or bridge structure will be required to maintain the connectivity of watercourses. Where pipes, culverts, and bridges are required as part of the greenway drainage design, an application has been made to the Office of Public Works (OPW) for Section 50 consents where required. Mitigation for the installation of culverts is presented above. • All surface water runoff will be directed to existing watercourses. Where existing drains are not available, new shallow v-ditches will be constructed which will convey surface water to the nearest watercourse. No new outfalls will be constructed into the River Eske. Attenuation will be provided at the trailheads which will ensure that surface water runoff does not exceed greenfield runoff rates. *SuDS – Trailhead Drainage Design* • The proposed trailheads will be designed to maximise permeable surfacing where possible, in order to reduce the runoff rate, reduce level of attenuation required and minimise the risk of flooding. Where additional impermeable surfacing is proposed, drainage will be attenuated by a swale or a basin and released at the greenfield runoff rate to mimic the existing hydraulic conditions and minimise impacts on the receiving environment. Hydrocarbon interception will also be incorporated into the design. • All new car parking areas are proposed to be constructed from a cellular porous paving solution such as Grasscrete or Truckcell, which provides approximately 90% permeability and captures hydrocarbon spills such that each pocket can be emptied and refilled with soil/grass seed in the event of die-back. A small number of gullies will be provided to account for the slight reduction in permeability, and these will convey runoff to attenuation swales or basins prior to discharge. • In terms of hydrocarbon spillages, one of the unique aspects of cellular permeable paving is that any spillage is limited to a self-contained “pocket” and will create die-back in the grass of this “pocket”. However, it will be limited to a local scale and will be apparent at ground level. Maintenance would therefore require only that the “pocket” is emptied and refilled with soil and grass seed. • There are areas of existing impermeable car parking (bitumen macadam) at the Donegal Town and Stranorlar trailheads, which are largely proposed to be retained along with the existing drainage regime. To provide some betterment, the drainage regime will be formalised to include for gullies at surface level and attenuation to greenfield runoff prior to discharge. • For the amenity areas where greenway users will congregate, permeable resin bound gravel is proposed to minimise the impact of additional runoff. *Welfare Facilities* Sanitary facilities will be provided at Donegal Town, Biddy’s O’Barnes, and Ballybofey / Stranorlar, and will include toilets, accessible toilets and baby changing facilities. These facilities will be maintained and serviced by Donegal County Council.
17.16	Lighting Lighting will be required at the trailheads and the sections closest to Donegal Town and Ballybofey/ Stranorlar (Ch.0-1050 (Donegal Town) and Ch.27500 – 30050 (Ballybofey / Stranorlar and Sessiaghoneill link). These sections include bridges over the River Eske and River Finn. The lighting will be in accordance with the Institution of Lighting Professionals and Bat Conservation Trust guidance (BCT, 2023), and will include the following elements: • All lighting will be a warm-white colour of 2200K or less. • Lamp post lighting will be LED and have no upward light spill and a sharp horizontal cut off. • Lighting outside the intended area of illumination will be minimised. Where light spill cannot be avoided, louvres, cowls or shields will be fitted to the columns. • Lux levels on roads and paths will be set to the minimum required by BS 5489-1:2020, P4. • Lighting at trailheads, including Biddy’s, will be restricted to targeted locations around the carpark boundary, illuminating the carpark area only. The closest lamp post to the Lowerymore River is at least 20m and will be separated from the river by planted screening. • Where lighting is required on bridges, such as the existing River Eske crossing and the proposed River Finn crossing, lighting will be limited to discreet recessed ground lights which will act as ‘glowing’ waymarkers with no light spill or downward light spill onto any watercourses. No lighting will be provided on the proposed River Eske crossing or the proposed River Lowerymore crossing.

No.	Description
17.17	Fencing and Landscaping • Fencing and landscape planting is proposed along certain stretches of the route of the proposed development. In general, the construction of new fencing will be minimised, and existing boundaries will be retained where possible. Dense vegetation exists alongside the route, and it is proposed that no fence will be installed in these areas to promote cohesion with the surrounding natural environment. Standard post and rail fence will be used along the boundary of the greenway for sections of the route where dense existing vegetation does not exist, and stock proof fencing will be installed in areas where livestock are found in adjacent fields. The landscaping plan includes the widespread planting of native Irish species of trees and shrubs, natural wildflower regeneration, woodland flora planting and wetland creation. The landscape design is presented in Chapter 14 of this EIAR and drawing No. 60701883-ACM-ELS-SW_ZZ_ZZ_ZZ-DR-LV-0001-0031. • Where fencing is proposed, the fencing will end 10cm above ground level to allow small animals including otter to cross the greenway. • The existing hedgerows and treelines that form the boundaries of the railway corridor and field boundaries will be retained. Vegetation clearance will be minimised along the length of the greenway itself and will only be undertaken within the footprint of the greenway. The only work that will take place outside the fence line but within the proposed development boundary is the proposed landscape planting. All of the existing vegetation outside of the earthworks zone will be retained. • Following the completion of the construction phase, lands temporarily acquired will be reinstated to existing agricultural condition. Where access is proposed affecting existing property boundaries, these areas will be reinstated on a like for like basis and may require the replanting of hedgerows/trees, as required.
17.18	Signage and Bins Signage will be provided to require that dogs are maintained on a lead for the duration of their visit to the greenway and that dog owners are required to pick up and dispose of dog excrement using the bins provided. This signage will be included at trail heads and at regular intervals along the route. Signage will inform greenway users of the importance of the general area to biodiversity and request responsible behaviour for all those using the amenity. To avoid an excessive amount of signage being installed and potentially ignored by users, the final locations of signs will be coordinated by Donegal County Council. Waste bins, which will also function as dog fouling receptacles, will also be located at the 3 major trailheads. Donegal County Council will be responsible for the waste management of these bins and receptacles.

Appendix C

An Coimisiún Pleanála Approval Including Any Conditions / Modifications

To be included as part of Construction Phase CEMP.

Appendix D

Environmental Operating Plan

Barnesmore Gap Greenway

Appendix 4.1D: Environmental Operating Plan

Donegal County Council

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1. Introduction

This document comprises project-specific Environmental Operating Plan (EOP) for the proposed Barnesmore Gap Greenway (hereafter referred to as "the proposed development") and has been developed in accordance with the National Roads Authority (NRA)/TII Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (NRA, 2007) *Guidelines for the Creation and Maintenance of an Environmental Operating Plan*.

The EOP outlines the procedures for the delivery of environmental mitigation measures and for addressing general day-to-day environmental issues that can arise during the construction phase of the proposed development. This document serves to assist the Contractor in preventing, managing, and/or minimising significant environmental impacts.

It will be a condition of the Construction Contract for the construction of the proposed development that the successful Contractor shall fully implement the EOP throughout the works. The EOP is a live document and will be updated by the Contractor as needed throughout the construction of the proposed development. It will be the duty of the successful Contractor to ensure that all sub-contractors fully adhere and implement the procedures and measures of the EOP.

1.1 Scope

The EOP provided by the Contractor will address the following key requirements:

- Roles and Responsibilities of the main Contractor's staff having regard to the main Contractor's organisational structure;
- Procedures for communicating with the public;
- Procedures for communicating with relevant site-personnel;
- Procedures for Environmental Awareness Training for the main contractor's staff;
- Monitoring procedures and responses to monitoring results, where contractually required, and
- Provide for a system of audit with regard to the effectiveness of the EOP during the construction life cycle of the project.

This EOP should be read in conjunction with the appendices associated with the Construction Environmental Management Plan (CEMP) and serves as an indicative template for the successful Contractor to ensure that they are fully aware and plan for all Environmental Commitments and Requirements relevant to the proposed development.

1.2 Contractor's Environmental Policy Statement

Environmental management is fundamental to the successful operation of construction activities. Therefore, the Environmental Policy must, as a priority, be understood by all parties involved in the contract and adhered to throughout the course of the works to allow for legal compliance and environmental management.

2. General Project Details

This section will be updated by the successful Contractor once appointed, to include further details on contact sheets, the legal register, organisational chart and duties and responsibilities.

Project details which have been identified prior to appointment of the Contractor are described in the subsequent subsection.

2.1 Project Description

The proposed development is an active travel facility located in south County Donegal, linking the settlements of Donegal Town and Ballybofey/Stranorlar. The proposed route of the greenway mainline is approximately 32km in length and will be a bi-directional shared walking, wheeling, and cycling route. There is a further 6km of spurs and loops which provide additional connectivity and integration to surrounding amenities and active travel routes, which gives a total length of 38km for the proposed facility. The greenway is proposed to follow along Barnesmore Gap, a scenic glacial valley that provides the only communication gap through the 'Bluestack Mountains' in southern County Donegal. This mountain pass provides the main transportation link between north and south Donegal.

2.2 Key Elements of the Project

The proposed development consists of the following key elements:

- Greenway
  - Approximately 32km of surfaced greenway mainline, 3.0 to 4.0m wide plus verges
  - Approximately 6km of surfaced greenway spurs and loops, 3.0m wide plus verges
  - Earthworks (cut, fill, capping and geogrid) and pavement associated with the above
  - Drainage, including ditches, pipes, outfalls and attenuation
  - Online active travel connections and crossings
- Ancillary Infrastructure
  - 6no trailheads including provision of car parking, amenity space and services
  - Approximately 33no rest areas including benches/picnic tables and bicycle parking
- Accommodation Works
  - Approximately 3km of access tracks
  - Privacy fencing, stockproof fencing and gates
- New Structures
  - Underpasses
    - 40m long N56 underpass (Ch. 950), the internal width is 6m to provide for the 4m facility width over this section of the greenway and a 1m lateral clearance to the walls of the box culvert on each side. Reinforced concrete wingwalls will be provided at the portals to the underpasses.

        - 26m long N15 underpass at Clar, internal width will be 5m to accommodate the 3m greenway width on this spur with 1m clearances on each side. Reinforced concrete wingwalls will be provided at the portals to the underpasses.
        - 26m long N15 Druminin underpass (Ch. 8,225), the width at 5.5m. Reinforced concrete wingwalls will be provided at the portals to the underpasses.
    - Road Overbridge
        - Road overbridge at Sessiagh View to the south of Ballybofey, a single-span, 21m long structure with a 1% longitudinal gradient and a straight plan alignment, deck consists of a U-frame folded steel plate trough with rotated square hollow sections
    - River Bridges
        - River Eske: 175m long, 6-span viaduct in a steep topography at the beginning of the Lough Eske Loop, longest span of 46m is across the River Eske. The remaining internal spans are all 28m, with the end spans being 18m.
        - Clogher River Bridge: single span, 24m long bridge adjacent to St. Francis National School
        - Lowerymore River Bridge: 24m long structure connecting the Biddy's Trailhead to Biddy's O'Barnes pub.
        - Burn Daurnett Bridge: 24m long structure on the Goland Link off the mainline alignment
    - River Finn Viaduct: a new deck structure on the remaining piers from the old railway viaduct. The overall length of this four-span structure will be approx. 54m in length; with intermediate spans of approx. 13.5m in length.
    - Culverts
        - 10no new culverts, including 1no box culvert of 1.8m internal width and 9no new circular culverts with internal diameters ranging from 0.9m to 1.5m.
- Existing Structures
    - Incorporation of 10no existing overbridges/underbridges and numerous minor culverts into the proposed development.
- Landscaping and environmental mitigation measures
- Lighting provision at specified trailheads and sections of greenway near urban areas.
- All associated site works

2.3 Location of all Work Sites, Offices, Compounds

Construction Compounds

Three main construction compounds will be used for the duration of construction. These compounds are located at proposed trailheads.

- Compound 1: Donegal Town
- Compound 2: Biddy O' Barnes
- Compound 3: Stranorlar

Working Areas

A total of 25 working areas will complement the main construction compounds, situated along the proposed development every 500m-2000m, depending on proximity to a main compound.

Detailed description of the proposed development is provided in Chapter 4 Description of the Proposed Development of the EIAR. Extents of the proposed development including construction sites, compounds etc., are shown in development drawings in Volume 3 Figures of the EIAR.

2.4 Construction Duration of the Scheme

The construction programme for the proposed development is anticipated to be 24 months. Construction is expected to commence in 2028 as per the programme. A detailed construction programme will be developed by the appointed Contractor, taking into account seasonal surveys and / or seasonal constraints required by the EIAR or NIS and will be appended here.

3. Contact Sheets

Contact details of relevant personnel employed during the construction phase of the proposed development are required to ensure that environmental incidents are competently reported. The contact details should be frequently reviewed to ensure that they are up to date.

Table 3-1, Table 3-2 and Table 3-3 provide examples of how to document the contact details of all relevant main contractor, employer and third-party consultation personnel respectively.

Table 3-1 - Main Contractor Contacts (Example)

Position Title	Name	Phone Number	Email Address
Project Manager			
Site Manager*			
Site Environmental Manager*			
Site Agents			
Forepersons			
Safety Officers*			
Site Emergency Number*			
Other, as appropriate			

***** 24hr contact details are required for persons with this position.

Table 3-2 - Employer Contacts (Example)

Organisation	Position Title	Name	Phone Number	Email Address
Project Resident Engineer's Office	Project Resident Engineer			
Other, as appropriate				

Table 3-3 - Third-Party Contacts (Example)

Organisation	Position Title	Name	Phone Number	Email Address
Donegal County Council				
Inland Fisheries Ireland				
Waterways Ireland				
National Parks and Wildlife Service				
Office of Public Works				
Environmental Protection Agency				
Local Authority				
Health and Safety Authority				
Emergency Services				
Other, as appropriate				

4. Reference Documents

4.1 Scheme Specific Documentation

Scheme specific documentation to be referred to when determining the Environmental Commitments and Requirements for the proposed development include:

- The Contract Documents;
- The Environmental Impact Assessment Report (EIAR);
- The Natura Impact Statement (NIS);
- Schedule of Commitments (Refer to the CEMP);
- Statutory Planning Consent including any additional Environmental commitments (Refer to the CEMP);
- Contractor's Construction Phase Safety and Health Plan.

The Contractor shall describe their Environmental Management System (EMS) to be implemented for the construction phase of the proposed development. This management system will be in accordance with the criteria of ISO 14001:2015 and updated into this EOP.

4.2 General Reference and Guidance Documentation

The Contractor will refer to TII's "Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan" when developing the EOP. The Contractor shall have regard to guidance and standards set out in the relevant TII/NRA guidelines, including, but not limited to the following:

- TII (2005) *Guidelines for the Treatment of Badgers prior to the Construction of a National Road Schemes. CC-ENV-01103;*
- TII (2005) *Guidelines for the Treatment of Bats during the Construction of National Road Schemes. CC-ENV-01102;*
- TII (2005) *Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes. CC-ENV-01101;*
- TII (2005) *Guidelines for the Testing and Mitigation of the Wetland Archaeological Heritage for National Road Schemes. PE-ARC-02008;*
- TII (2006) *Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post-Construction of National Road Schemes. GE-ENV-01110;*
- TII (2022) *Air Quality Assessment of Proposed National Roads – Standard. PE-ENV-01107*
- TII (2020) *The Management of Invasive Alien Plant Species on National Roads – Standard. GE-ENV-01104*
- TII (2020) *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance. GE-ENV-01105*
- TII (2004) *Guidelines for the Treatment of Noise and Vibration in National Road Schemes. PE-ENV-01110;*
- TII (2006) *Guidelines for the Treatment of Otters Prior to the Construction of National Road Schemes. CC-ENV-01104;*
- TII (2017) *The Management of Waste from National Road Construction Projects. GE-ENV-01101, and;*

- TII (2006) *Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan. GE-ENV-01110.*

5. Organisational Structure/Duties and Responsibilities

5.1 Organisational Structure

The successful Contractor will provide an organogram in the EOP to assign the roles and responsibilities of their personnel under the EOP.

5.2 Duties and Responsibilities

Project Manager

Name: [To be inserted by successful contractor]

Duties and Responsibilities

The Project Managers main duties and responsibilities in relation to the EOP include liaising with the Project Team in assigning duties and responsibilities in relation to the EOP to individual members of the main contractor's project staff.

It is the responsibility of the Project Manager to approve key personnel required for employment on the project. He/She will liaise with the Site Environmental Manager.

The Project Manager will lead the works on site. He/She will be responsible for the management and control of the activities and will have overall responsibility for the implementation of the EOP. He/She will be assisted by the Site Environmental Manager who will act as his/her deputy.

Site Manager

Name: [To be inserted by successful contractor]

Duties and Responsibilities

The Site Manager's environmental management responsibilities include, but are not limited to:

- Liaise with the Site Environmental Manager and the Project Team in assigning duties and responsibilities in relation to the EOP, to individual members of the main contractor's project staff;
- Liaising with Site Manager in preparing, reviewing and updating all site-specific method statements for activities where there is a risk of pollution or adverse effects on the environment;
- Liaising with the Site Environmental Manager in agreeing site specific Method Statements with Third Parties;
- Ensuring that all relevant information on project programming, timing, construction methodology, etc., is communicated from the contractor's Project Team, including the Project Manager, to the Site Environmental Manager in a timely and efficient manner in order to allow pre-emptive actions relating to the environment to be taken where required;
- ensuring that the risk assessments for control of noise and environmental risk are prepared and effectively monitored, reviewed and communicated on site;
- close liaison with the site Environmental Manager to ensure adequate resources are made available for implementation of the EOP; and
- ensuring that the Site Environmental Manager reviews all method statements, performs regular and frequent environmental site inspections and that relevant environmental protocols are incorporated and appended.

Site Environmental Manager

Name: [To be inserted by successful contractor]

Duties and Responsibilities

In order to ensure the successful development, implementation and maintenance of the EOP, the Contractor will be required to appoint an independent Site Environmental Manager to provide independently verifiable audit reports.

The Site Environmental Manager must possess sufficient training, experience and knowledge appropriate to the nature of the task to be undertaken, a Level Eight qualification recognised by the Higher Education and Training Awards Council (HETAC), or a university equivalent, or other qualification acceptable to the Employer, in Environmental Science or Environmental Management, Environmental Hydrology, Engineering or other relevant qualification acceptable to the Employer.

Separate from the on-going and detailed monitoring carried out by the contractor as part of the EOP, the EM shall carry out the inspection/ monitoring regime described below, and report to the Contractor. The results will be stored in the Site Environmental Manager's monitoring file and will be available for inspection/ audit by the Client, National Parks and Wildlife Service (NPWS) or Inland Fisheries Ireland (IFI) staff. All inspections/ monitoring/ results will be recorded on standard forms.

The responsibilities of the Site Environmental Manager include:

Site-Specific Method Statements

- Liaising with the Construction Manager in preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage. These site-specific Method Statements shall incorporate relevant Environmental Control Measures and take account of relevant Environmental Control Measure Sheets;
- Liaising with the Construction Manager in reviewing and updating site-specific Method Statements for all Works activities where Environmental Control Measures and Environmental Control Measure Sheets have been altered, and
- Liaising with the Construction Manager where third party agreement is required in relation to site-specific Method Statements, Environmental Control Measures and/or Environmental Control Measure Sheets.

General

- Being familiar with the contents, environmental commitments and requirements contained within the Reference Documents
- Being familiar with baseline data gathered during Environmental Impact Assessment and NIS and during pre-construction surveys;
- Listing all Environmental Commitments and Requirements in an Environmental Commitments Summary Table;
- Assisting the Construction Manager in liaising with the PSDP/Engineer and the provision of information on environmental management to the Engineer during the course of the construction phase, and
- Liaising with the Project Team in assigning duties and responsibilities in relation to the EOP to individual members of the main contractor's project staff.

Third Party Consultations

- Overseeing, ensuring coordination and playing a lead role in third party consultations required statutorily, contractually and in order to fulfil best practice requirements;
- Ensuring that the minutes of meetings, action lists, formal communications, etc., are well documented and that consultation certificates are issued to the Engineer as required;
- Liaising with all prescribed bodies during site visits, inspections and consultations;
- Where new Environmental Control Measures are agreed as a result of third party consultation, ensuring that the EOP is amended accordingly;

- Where new Environmental Control Measures are agreed as a result of third party consultation, the Site Environmental Manager shall liaise with the Construction Manager in updating relevant site-specific Method Statements, and
- Where required, liaising with the Construction Manager in agreeing site-specific Method Statements with third parties.

Licensing

- Ensuring that all relevant works have (and are being carried out in accordance with) the required permits, licences, certificates, planning permissions, etc.;
- Liaising with the designated licence holders with respect to licences granted pursuant to the Wildlife Act, 1976, as amended;
- Liaising with the designated licence holders and "scientific agent" (generally defined in the licence as "the contractor engaged to carry out the scientific direction and monitoring of mitigation measures") with respect to licences granted pursuant to the European Communities (Natural Habitats) Regulations 1997, as amended, and
- Bringing to the attention of the Project, Design and Construction Team any timing and legal constraints that may be imposed on the carrying out of certain tasks.

Waste Management Documentation

- Holding copies of all permits and licences provided by waste contractors;
- Ensuring that any operations or activities that require certificates of registration, waste collection permits, waste permits, waste licences, etc., have appropriate authorisation, and
- Gathering and holding documentation with respect to waste disposal.

Legislation

- Keeping up to date with changes in environmental legislation that may affect environmental management during the construction phase;
- Advising the Construction Manager of these changes, and
- Reviewing and amending the EOP in light of these changes and bringing the changes to the attention of the main contractor's senior management and subcontractors.

Site environmental inspections

- Carrying out regular documented inspections of the site to ensure that work is being carried out in accordance with the Environmental Control Measures and relevant site-specific Method Statements, etc, and
- Appending copies of the inspection reports to the EOP.

Specialist environmental contractors

- Identifying requirements for specialist environmental contractors (including ecologists, waste contractors and spill clean-up specialists) before commencement of the project;
- Procuring the services of specialist environmental contractors and liaising with them with respect to site access and report production;
- Ensuring that specialist environmental contractors are competent and have sufficient expertise to co-ordinate and manage environmental issues, and
- Co-ordinating the activities of all specialist environmental contractors on environmental matters arising out of the contract.

Environmental Induction Training and Environmental Tool Box Talks

- Ensuring that Environmental Induction Training is carried out for all the main contractor's site personnel. The induction training may be carried out in conjunction with Safety Induction Training, and

- Providing toolbox talks on Environmental Control Measures associated with site specific Method Statements to those who will undertake the work.

Environmental Incidents/Spillages

- The Site Environmental Manager shall be notified of all incidents where there has been a breach of agreed environmental management procedures: where there has been a spillage of a potentially environmentally harmful substance; where there has been an unauthorised discharge to ground, water or air; where there has been damage to a protected habitat, etc.;
- The Site Environmental Manager shallprepare and be in readiness to implement at all times an Emergency Response Plan.
- The Site Environmental Manager is responsible for notifying the relevant statutory authority of environmental incidents, and
- Carrying out an investigation and producing a report regarding environmental incidents. The report of the incident and details of remedial actions taken shall be made available to the relevant authority, the Engineer and the Construction Manager.

Design Manager

Name: [To be inserted by successful contractor]

Duties and Responsibilities

The main duties and responsibilities of the Design Manger include:

- Be familiar with the EOP and relevant documentation referred to within;
- Be familiar with the contents, commitments and requirements contained within the reference documents; and
- Participate in Third Party Consultations and liaising with third Parties through the site Environmental Manager.

Site Agents

Name: [To be inserted by successful contractor]

Duties and Responsibilities

The Site Agents are responsible for the following:

- Ensuring Forepersons under his/her control adhere to the relevant Environmental Control measures and relevant site-specific Method Statements, etc.
- Ensuring that the procedures agreed during third party consultations are followed;
- Reporting immediately to the site Environmental Manager any incidents where there has been a breach of agreed environmental management procedures, where there has been a spillage of a potentially environmentally harmful substance, where there has been an unauthorised discharge to ground, water or air, damage to habitat, etc.
- Attending environmental review meeting and preparing any relevant documentation as required by Management.

Forepersons

Name: [To be inserted by successful contractor]

Duties and Responsibilities

The forepersons on site are responsible for the following:

- Ensuring personnel under his/her control adhere to the relevant environmental control measures and relevant site-specific Method Statements;
- Reporting immediately to the site agents and site Environmental Manager any incidents where there has been a breach of agreed procedures e.g. spillages and discharges.

Employer's Representative

Name: [To be inserted by successful contractor]

Duties and Responsibilities

The Employer's Representative (ER) acts on behalf of the Employer in the course of a construction project. The EOP will be audited by the Employer's Representative to ensure that the Contractor is compliant with the environmental provisions of the Contract Documents.

Project Supervisor Construction Stage

The role of the Project Supervisor Construction Stage (PSCS) is to manage and co-ordinate health and safety matters during the construction stage. The PSCS will be appointed before the construction work begins and will remain in that position until all construction work on the project is completed.

It is the responsibility of the PSCS to ensure that the project:

- is designed and is capable of being constructed to be safe and without risk to health;
- is constructed to be safe and without risk to health;
- can be maintained safely and without risk to health during subsequent use; and
- complies in all respects, as appropriate, with the relevant statutory provisions

The PSCS will prepare the Construction Phase Safety and Health Plan in accordance with the Safety, Health and Welfare at Work (Construction) Regulations 2013 (as amended) prior to the commencement of construction work for the project. The Plan shall provide the blueprint for managing and co-ordinating safety and health during construction and shall explain how the key safety and health issues will be managed.

The PSCS will maintain contact with the Project Supervisor Design Process (PSDP) throughout the construction phase to communicate any health and safety related issues. The PSDP will prepare a written safety file appropriate to the characteristics of the project, containing relevant health and safety information, to be taken into account during any subsequent construction work following completion of the project.

All Project Personnel

Name: [To be inserted by successful contractor]

Duties and Responsibilities

All project personnel have the following responsibilities:

- Reporting any operations and conditions that deviate from the EOP to the Site Agent and site Environmental Manager. Depending on circumstances it may be appropriate for general operatives and machinery operators to report directly to their Foreperson who will then report to the site Environmental Manager and Site Agent;
- taking an active part in site safety and environmental meetings;
- ensuring awareness of the contents of method statements, plans, supervisors' meetings or any other meetings that concern the environmental management of the site; and
- Attend environmental training as required.

Ecological Clerk of Works (ECoW)

Name: [To be inserted by successful contractor]

Duties and Responsibilities

In order to ensure the successful development and implementation of the EOP, the Contractor will appoint an independent Ecological Clerk of Works (ECoW). The ECoW must possess training, experience and knowledge appropriate to the role, including:

- An NFQ Level 8 qualification or equivalent or other acceptable qualification in ecology or environmental biology; and,

- Demonstrable experience in the protection of European sites.

The principal functions of the ECoW are:

- To provide ecological supervision of the construction of the proposed development and thereby ensure the full and proper implementation of all the mitigation measures relating to biodiversity prescribed in the EIAR and NIS;
- To regularly review the outcome of the specialist hydroacoustic monitoring if being undertaken and, on that basis, make any necessary adjustments to the mitigation; and,
- To carry out weekly inspections and reporting on the implementation of the Contractor's Biosecurity Protocol.

During the preparation of the Contractor's EOP, the site Environmental Manager may, as appropriate, assign other duties and responsibilities to the ECoW.

In exercising his/her functions, the ECoW will be required to keep a monitoring file and this will be made available for inspection or audit by the NPWS or IFI at any time.

Project Archaeologist

Name: [To be inserted by successful contractor]

Duties and Responsibilities

A suitably qualitied Project Archaeologist on site is responsible for the following:

- Relevant licences to the Department of Housing, Local Government and Heritage required for the project in advance of any construction work taking place and throughout the project as required
- To supervise works in vicinity of known archaeological sites' and
- To supervise any pre-construction archaeological survey works.

Section 26 of the National Monuments Act 1930 (as amended) requires that excavations for archaeological purposes must be carried out by suitably qualified and experienced archaeologists acting under an excavation licence.

Other

Subject to the environmental commitments / requirements, other environmental specialists will be employed as required during the construction works.

6. Environmental Commitments

The Schedule of Commitments comprises:

- The mitigation measures as outlined in Chapter 21 Summary of Mitigation and Monitoring Measures of the EIAR for the proposed development, plus any additional measures set out in the NIS for the proposed development, any commitments arising during the statutory planning process up to and including the Oral Hearing (if required), and conditions imposed in a development consent; and
- Any relevant specifications and / or methodologies required to implement the prescribed measures / commitments properly; and
- Any procedures for the monitoring of the implementation of the stated measures / commitments, which may identify whether (i) the measure / commitment will be implemented by the Contractors and (ii) once implemented, whether the measure/ commitment is effectively addressing the environmental impact it was prescribed to address.

Relevant environmental legislation prescribes environmental performance criteria. Therefore, in addition to: the Contract documents, the conditions imposed by An Coimisiún Pleanála and relevant environmental legislation all prescribe environmental performance criteria.

The following table lists the complete suite of Environmental Commitments together with the relative specification and evidence of how each commitment will be met. An example of the layout of this table and potential entries is given below.

Table 6-4 - Environmental Commitments (Example)

Environmental Commitment	Source (Legislation / Specific Ref.)	Action Owner	Evidence	Target Date	Close Date
Noise and Vibration	EIAR Volume 2: Chapter 13 Noise and Vibration; Chapter 21 Summary of Mitigation and Monitoring Measures	Env. Manager / Noise Specialist / Env. Designer / Site Agent / Foreperson	Method Statement / Site Inspections / Monitoring Data / Environmental Control Measure Sheet	Ongoing	End of Contract
Biodiversity	EIAR Volume 2: Chapter 7 Biodiversity; Chapter 21 Summary of Mitigation and Monitoring Measures	Env. Manager / Specialist Ecologist / Env. Designer / Site Agent / Foreperson	Method Statement / Ecological Walkover / Pre-surveys / agreement from IFI / Site Inspections	Ongoing	End of Contract
Hydrology and Hydrogeology	EIAR Volume 2: Chapter 7 Biodiversity; Chapter 10 Hydrogeology; Chapter 9 Hydrology; Chapter 21 Summary of Mitigation and Monitoring Measures	Env. Manager / Specialist Ecologist / Env. Designer / Site Agent / Foreperson	Method Statement / Site Inspections / Monitoring Data	Ongoing	End of Contract
Air Quality and Climate	EIAR Volume 2: Chapter 11 Air Quality; Chapter 12 Climate; Chapter 21 Summary of Mitigation and Monitoring Measures	Env. Manager / Site Agent / Foreperson	Method Statement / Site Inspections / Monitoring Data	Ongoing	End of Contract

7. Environmental Control Measures

Environmental Control Measures to meet the Environmental Commitments / Requirements will be identified and implemented by the Contractor, refer to the CEMP for the Schedule of Environmental Commitments / Requirements.

The Contractor will follow the procedure outlined in Figure 7-1 to identify the environmental control measures.

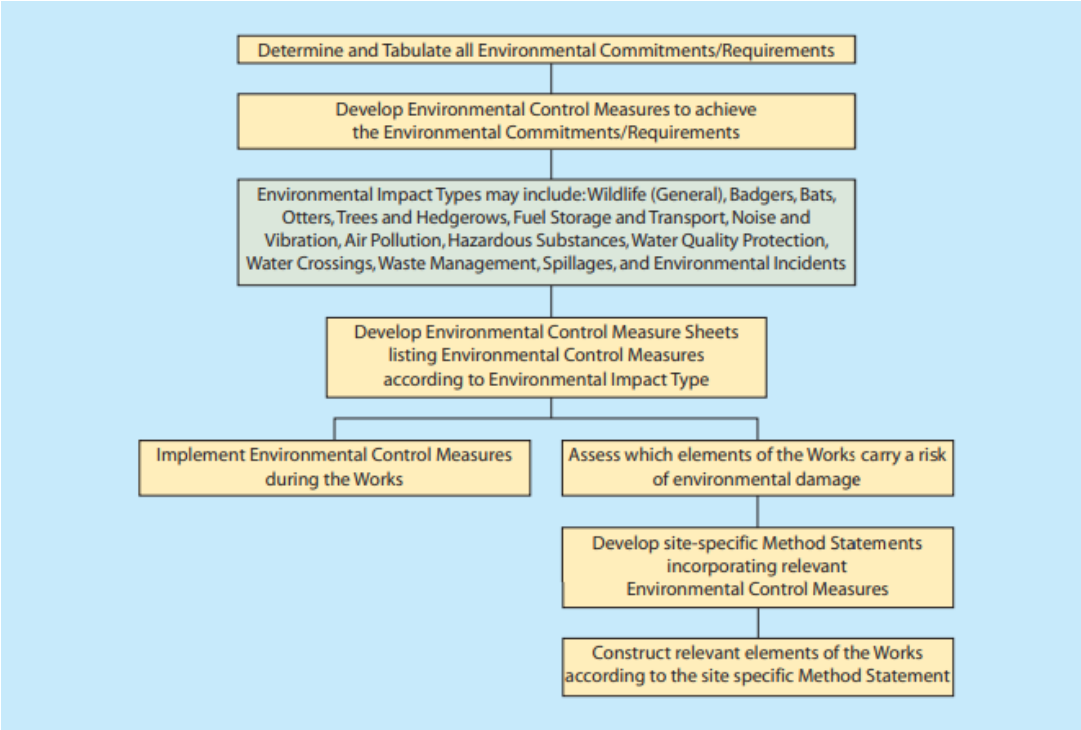

Figure 7-1 - Example of Main Steps in Developing and Implementing Environmental Control Measures. Source: *TII's Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan*

As outlined in Figure 7-1, some environmental control measures are generally implemented across all works. However, some construction works may present a risk of environmental damage for which, relevant environmental control measures are required to be incorporated into site-specific method statements.

Environmental Control Sheets will be prepared by the Contractor which will contain the prescribed environmental control measures according to the environmental impact (e.g., impacts on watercourses, bats, badger etc.). It will be the responsibility of the site Environmental Manager to ensure that the identified environmental control measures are sufficient to meet the environmental commitments and that they are brought to the attention of the relevant key personnel.

8. Site Specific Method Statements

A Method Statement may be defined as a statement of the construction methods and resources to be employed in executing construction work. Method Statements can cover numerous works activities, however where there is a risk of environmental damage, site-specific method statements must be prepared for the construction works. The Method Statement shall be prepared by the Contractor with assistance from the site Environmental Manager who will identify which elements of the works have the potential to significantly impact the environment.

The Method Statement shall refer to relevant Environmental Control Measure Sheets and incorporate relevant Environmental Control Measures. The Method Statement shall include:

- The proposed method of construction and how the mitigation from the EIAR and NIS shall be implemented.
- Contingency plans and emergency plans to limit damage caused by accidents, spills or other unforeseen events: and
- Notification procedures to the relevant Authorities, Utilities and Service Providers.

There may be a requirement for method statements to be reviewed and / or approved by third party consultees (where applicable) prior to their finalisation. Once finalised, the Contractor is required to provide the details of the method statements to Donegal County Council prior to the commencement of the construction works.

9. Environmental Awareness Training

9.1 Briefing on EOP, EIAR, NIS and Contractual Requirements

The site Environmental Manager will brief the Contractor's senior personnel, namely the Project Manager, Site Manager, Design Engineers, Site Agents, PSCS and any other key personnel on the EOP and the Environmental Commitments/ Requirements that must be met during the construction phase.

9.2 Environmental Induction Training

All employees and subcontractors involved on site will be given a comprehensive induction prior to commencement of the works. The environmental training and awareness procedure will ensure that staff are familiar with the principles of the CEMP, the environmental aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

This environmental training can be run concurrently with safety awareness training.

Training will include:

- Overview of the Environmental Policy and Construction Environmental Management Plan, goals and objectives;
- Awareness in relation to risk, consequence and methods of avoiding environmental risks as identified within the Register of Aspects and with the planning conditions;
- Awareness of roles and individual environmental responsibilities and environmental constrains to specific jobs;
- Location of and sensitivity of Special Area of Conservations, Special Protection Areas, protected monuments, structures etc.
- Location of habitats and species to be protected during construction, how activities may affect them and methods necessary to avoid impacts.

A record will be kept of a signed register on the project files of all attendees of the environmental induction.

Toolbox talks based on specific activities being carried out will be given to personnel by the nominated project representative. These will be based on specific activities being carried out and will include environmental issues particular to the project, including the impact on bird populations and water quality namely:

- Oil/Diesel spill prevention and safe refuelling practice;
- Storage of materials including oil/diesels and cement;
- Emergency response processes used to deal with spills;
- Minimising disturbance to wildlife;
- Emergency response to include water pollution hotline to the EPA for regulator response. Identification of registered/accredited spill cleanup company for oil etc.; and
- Consideration of importance of containment of vehicle washing, containments of concrete / cement / grout washout etc, bank protection using hessian to prevent excessive scour and mobilisation of suspended solids, maintenance of vegetation corridors etc.

9.3 Specific Training

A project specific training plan that identifies the competency requirements for all personnel allocated with environmental responsibilities will be produced by the Contractor. Training will be provided by the Contractor to ensure that all persons working on site have a practical understanding of environmental issues and management requirements prior to commencing activities. A register of completed training is to be kept by the site Environmental Manager. The Site Manager will ensure that environmental emergency plans are drawn up and the site Environmental Manager will conduct the necessary training/inductions.

10. Communication

10.1 Internal Communication

Environmental issues and performance aspects will be communicated to the workforce on a regular basis. Weekly project meetings, which follow a set agenda incorporating Environment, will be held alongside overall management meetings.

All staff and sub-contractors involved in all phases of the project will be encouraged to report environmental issues.

The PSCS will maintain contact with the PSDP throughout the works to communicate any health and safety related issues. The PSDP will prepare a written safety file appropriate to the characteristics of the project, containing relevant health and safety information, to be taken into account during any subsequent construction work following completion of the project.

10.2 External Communication

A Stakeholder Management and Communication Plan (SMCP) will be prepared by the Contractor. The Employer will appoint a Public Liaison Officer, or equivalent, who will be consulted in the preparation of the Plan as well as its maintenance and implementation. The SMCP will provide the means of the stakeholder and members of the public to communicate with the project team, and for the project team to communicate relevant information of the scheme.

The principle component of a Stakeholder Management and Communication Plan will include:

- Details of general construction process/phasing will be commuted to the relevant stakeholders and members of the public prior to implementation to ensure local residents and businesses are fully informed of the nature and duration of construction works.
- Details of a contact name and number of any complaints that may arise during such works.

A complaints register will be developed as part of the Plan to efficiently record any complaints made.

11. Inspections, Auditing and Monitoring Compliance

11.1 Inspections

The appointed site Environmental Manager will carry out environmental inspections at appropriate intervals. The site Environmental Manager will be accompanied by qualified and accredited environmental specialists (ecologists, landscape architects and noise specialists etc.) when appropriate and where required during inspections.

The site Environmental Manager will append the reports from environmental inspections to this EOP.

11.2 Monitoring

The EIAR may require the execution of certain types of monitoring e.g., related to noise and vibration, water quality air quality, etc.

The appointed site Environmental Manager will prepare a schedule of monitoring required, detailing the type of report to be prepared and to whom it should be send to. All of the monitoring is to be carried out by competent experts.

11.3 Audits

Audit by the Environmental Manager

The EOP will be audited by the site Environmental Manager in conjunction with the Site Manager annually or as agreed at the start of the contract to ensure that the appointed Contractor is in compliance with all environmental commitments / requirements. Should there be a need to revise the EOP, the site Environmental Manager will make all the necessary changes to the EOP and inform the key personnel of such changes. The EOP shall only be revised by the site Environmental Manager and approved by the Site Manager.

Audit by the Employer's Representative

The EOP will be audited by the Employer's Representative to ensure that the Contractor is compliant with the environmental provisions of the Contract Documents.

12. Operational Management of the Greenway

The Barnesmore Gap Greenway will form part of the infrastructure under the control of Donegal County Council. A separate Maintenance and Management Plan has been developed for the scheme (Appendix 4.2 of the EIAR).

13. Handover of the Final EOP

Two copies of the final and complete EOP shall be supplied to the Employer's Representative / PSDP immediately following the end of the defect's notification period.

Appendix E

Resource Waste Management Plan

Barnesmore Gap Greenway

Appendix 4.1F: Incident Response Plan

Donegal County Council

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1. Introduction

This Incident Response Plan (IRP) describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances. It has been developed to provide the information that each employee may need in order to respond to an emergency and to handle it effectively.

1.1 Objective of the Plan

The primary objective of this document is to:

- Ensure the health and safety of workers and visitors at and in proximity to the site.
- Minimise any impacts to the environment and to ensure protection of the water quality and the aquatic species dependant on it.
- Protect property and operations at the proposed site and to minimise the impact on the continuity of business.
- Establish procedures that enable personnel to respond to incidents with an integrated multi-departmental effort and in a manner that minimises the possibility of loss and reduces the potential.

1.2 Responsibility

It is the responsibility of the Site Environmental Manager to maintain and update this IRP as required.

This IRP will be reviewed on an ongoing basis and amended, as necessary, when one or more of the following occur:

- Applicable regulations are revised.
- The Plan fails in an emergency.
- The project changes in its design, construction, operation, maintenance, or other circumstance in a way that materially increases the potential for impacts on the environment, workers or visitors to the site; and/or.
- Amendments are required by a regulatory authority.

2. Response Planning

2.1 Incident Response Plan

The Contractor's Construction Environmental Management Plan (CEMP) will include an Incident Response Plan, which will detail the controls to be adopted to manage the risk of pollution incidents and procedures to be followed in the event of any pollution incidents.

The Incident Response Plan will include the following, as appropriate:

- Reference to the Method Statements and Management Plans for other construction activities, insofar as they are relevant for the purposes of mitigating against health and safety and pollution incidents.
- Procedures to be adopted to contain, limit and mitigate any adverse effects, as far as reasonably practicable, in the event of a health and safety or pollution incident.
- Details of spill clean-up companies appropriate to deal with pollution incidents associated with the materials being used or stored on site.
- Procedures to be followed and appropriate information to be provided in the event of any incident, such as a spillage or release of a potentially hazardous material.
- Procedures for notifying appropriate emergency services, authorities, the Employer's Representative and personnel on the construction site.
- Procedures for notifying relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers of pollution incidents, where required.
- Maps showing the locations, together with address and contact details, of local emergency services facilities such as police stations, fire authorities, medical facilities and other relevant authorities.
- Contact details for the persons responsible on the construction site and within the Contractor's organisation for pollution incident response.

2.2 Monitoring

The Contractor will investigate and provide reports on any health and safety or pollution incidents to the Employer's Representative, including, as appropriate:

- A description of the incident;
- Contributory causes;
- Adverse effects;
- Measures implemented to mitigate adverse effects; and,
- Effectiveness of measures implemented to prevent pollution.

The Contractor will undertake appropriate monitoring of the procedures and measures set out in the management plans for construction activities required to prevent health and safety or pollution incidents to ensure they are being adequately implemented.

The Contractor will monitor the effectiveness of the procedures and measures implemented in the event of an incident and the effectiveness of the response procedures set out in the Incident Response Plan to identify any areas where improvement is required.

2.3 Accidental Spill Control Measures

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/fuel spillages will exist on the site and any such incidents will require an emergency response procedure. As assessed in Chapter 19, Major Accidents and Disasters, the spillage or long-term seepage of pollutants into a watercourse during the construction phase is anticipated to potentially have a moderate impact, post-mitigation. No significant impacts resulting from accidental spillages are likely in the operational phase. The following steps provide the procedure to be followed in the event of an oil/fuel spill occurring on site:

- Identify and stop the source of the spill and alert people working in the vicinity;
- Notify the Site Environmental Manager immediately giving information on the location, type, extent of the spill;
- If applicable and safe to do so, eliminate any sources of ignition in the vicinity of the incident;
- Contain the spill using control materials, spill kits, 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 and or/or sensitive habitats;
- 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;
- The Site Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further contamination from occurring; and
- The Site Environmental Manager will notify the appropriate stakeholders of the incident.

2.4 Extreme Weather Events

The contractor will consider the impacts of extreme weather events and related conditions during construction. The contractor will use a short to medium range weather forecasting service from Met Éireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures. As assessed in Chapter 19, Major Accidents and Disasters, extreme weather events in the construction phase are anticipated to potentially have a moderate impact, post-mitigation. No significant impacts resulting from extreme weather events are likely in the operational phase. The detailed IRP should consider all measures deemed necessary and appropriate to manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements should also consider extreme weather events where risks have been identified.

2.5 Outline Incident Response Plan

Name and address of the Client:

Donegal County Council
Base Enterprise Centre
Railway Road
Stranorlar
Co Donegal

The contact within the Client organisation: _____ tel no: _____

Site Location:

Overview of the activities on site:

It is estimated that construction of the full scheme will take approximately 18 to 24 months.

The proposed route of the greenway mainline is approximately 30km in length and will be a bi-directional shared walking, wheeling, and cycling route. There is a further 7.5km of spurs and loops which provide additional connectivity and integration to surrounding amenities and active travel routes, which gives a total length of 37.5km for the proposed facility.

- Greenway construction
- Ancillary Infrastructure
- Accommodation Works
- New Structures
- Culverts
- Works to existing structures

Potential Incidents:

Potential incidents requiring emergency response procedures:

- Fuel and oil spills;
- Road traffic accidents involving chemical or biological spills;
- Earth slippages;
- Extreme rainfall events, causing swelling of the River Finn;
- Fires;
- Activities resulting in noise and vibration, air pollution, hazardous substances or impacts on water;
- Working within and in vicinity of watercourses;
- Waste management; and,
- Discharge of effluent.

The Contractor will update the list of potential incidents based on their proposed construction methods and programme for the proposed development and include, as a minimum, the following:

- The measures to be taken to reduce the risk potential;
- Procedures to be put in place to deal with the risk;
- Person responsible for dealing with incidents;
- Procedures for alerting key staff;
- Standby/rota systems;
- Clearly defined roles and responsibilities;
- Names of staff and contractors trained in incident response;
- The types and location of emergency response equipment available and appropriate personal protective equipment to be worn;
- A system of response coordination;
- Off-site support; and,
- Particular emergency service or persons to be notified in case of incident.

Date and version of the plan:	**Name or position of person responsible for compiling/approving the plan:**

Review Date:	**Date of next review:**

Objectives of the IRP:

To ensure works are carried out in such a way as to avoid injury, health hazards or pollution incidents, however, should any such incident occur, procedures and measures will be implemented to contain, limit and mitigate the effects as far as reasonably practicable.

List of external organisations consulted in the preparation of the IRP:

TBC by Contractor when preparing IRP

Distribution of the IRP

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Appendix F

Incident Response Plan

Barnesmore Gap Greenway

Appendix 4.1F: Incident Response Plan

Donegal County Council

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1. Introduction

This Incident Response Plan (IRP) describes the procedures, lines of authority and processes that will be followed to ensure that incident response efforts are prompt, efficient, and appropriate to particular circumstances. It has been developed to provide the information that each employee may need in order to respond to an emergency and to handle it effectively.

1.1 Objective of the Plan

The primary objective of this document is to:

- Ensure the health and safety of workers and visitors at and in proximity to the site.
- Minimise any impacts to the environment and to ensure protection of the water quality and the aquatic species dependant on it.
- Protect property and operations at the proposed site and to minimise the impact on the continuity of business.
- Establish procedures that enable personnel to respond to incidents with an integrated multi-departmental effort and in a manner that minimises the possibility of loss and reduces the potential.

1.2 Responsibility

It is the responsibility of the Site Environmental Manager to maintain and update this IRP as required.

This IRP will be reviewed on an ongoing basis and amended, as necessary, when one or more of the following occur:

- Applicable regulations are revised.
- The Plan fails in an emergency.
- The project changes in its design, construction, operation, maintenance, or other circumstance in a way that materially increases the potential for impacts on the environment, workers or visitors to the site; and/or.
- Amendments are required by a regulatory authority.

2. Response Planning

2.1 Incident Response Plan

The Contractor's Construction Environmental Management Plan (CEMP) will include an Incident Response Plan, which will detail the controls to be adopted to manage the risk of pollution incidents and procedures to be followed in the event of any pollution incidents.

The Incident Response Plan will include the following, as appropriate:

- Reference to the Method Statements and Management Plans for other construction activities, insofar as they are relevant for the purposes of mitigating against health and safety and pollution incidents.
- Procedures to be adopted to contain, limit and mitigate any adverse effects, as far as reasonably practicable, in the event of a health and safety or pollution incident.
- Details of spill clean-up companies appropriate to deal with pollution incidents associated with the materials being used or stored on site.
- Procedures to be followed and appropriate information to be provided in the event of any incident, such as a spillage or release of a potentially hazardous material.
- Procedures for notifying appropriate emergency services, authorities, the Employer's Representative and personnel on the construction site.
- Procedures for notifying relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers of pollution incidents, where required.
- Maps showing the locations, together with address and contact details, of local emergency services facilities such as police stations, fire authorities, medical facilities and other relevant authorities.
- Contact details for the persons responsible on the construction site and within the Contractor's organisation for pollution incident response.

2.2 Monitoring

The Contractor will investigate and provide reports on any health and safety or pollution incidents to the Employer's Representative, including, as appropriate:

- A description of the incident;
- Contributory causes;
- Adverse effects;
- Measures implemented to mitigate adverse effects; and,
- Effectiveness of measures implemented to prevent pollution.

The Contractor will undertake appropriate monitoring of the procedures and measures set out in the management plans for construction activities required to prevent health and safety or pollution incidents to ensure they are being adequately implemented.

The Contractor will monitor the effectiveness of the procedures and measures implemented in the event of an incident and the effectiveness of the response procedures set out in the Incident Response Plan to identify any areas where improvement is required.

2.3 Accidental Spill Control Measures

Every effort will be made to prevent pollution incidents associated with spills during the construction of the proposed development. The risk of oil/fuel spillages will exist on the site and any such incidents will require an emergency response procedure. As assessed in Chapter 19, Major Accidents and Disasters, the spillage or long-term seepage of pollutants into a watercourse during the construction phase is anticipated to potentially have a moderate impact, post-mitigation. No significant impacts resulting from accidental spillages are likely in the operational phase. The following steps provide the procedure to be followed in the event of an oil/fuel spill occurring on site:

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- Notify the Site Environmental Manager immediately giving information on the location, type, extent of the spill;
- If applicable and safe to do so, eliminate any sources of ignition in the vicinity of the incident;
- Contain the spill using control materials, spill kits, 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 and or/or sensitive habitats;
- 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;
- The Site Environmental Manager shall inspect the site as soon as practicable and ensure the necessary measures are in place to contain and clean up the spill and prevent further contamination from occurring; and
- The Site Environmental Manager will notify the appropriate stakeholders of the incident.

2.4 Extreme Weather Events

The contractor will consider the impacts of extreme weather events and related conditions during construction. The contractor will use a short to medium range weather forecasting service from Met Éireann or other approved meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and mitigation measures. As assessed in Chapter 19, Major Accidents and Disasters, extreme weather events in the construction phase are anticipated to potentially have a moderate impact, post-mitigation. No significant impacts resulting from extreme weather events are likely in the operational phase. The detailed IRP should consider all measures deemed necessary and appropriate to manage extreme weather events and should specifically cover training of personnel and prevention and monitoring arrangements for staff. As appropriate, method statements should also consider extreme weather events where risks have been identified.

2.5 Outline Incident Response Plan

Name and address of the Client:

Donegal County Council
Base Enterprise Centre
Railway Road
Stranorlar
Co Donegal

The contact within the Client organisation: _____ tel no: _____

Site Location:

Overview of the activities on site:

It is estimated that construction of the full scheme will take approximately 18 to 24 months.

The proposed route of the greenway mainline is approximately 30km in length and will be a bi-directional shared walking, wheeling, and cycling route. There is a further 7.5km of spurs and loops which provide additional connectivity and integration to surrounding amenities and active travel routes, which gives a total length of 37.5km for the proposed facility.

- Greenway construction
- Ancillary Infrastructure
- Accommodation Works
- New Structures
- Culverts
- Works to existing structures

Potential Incidents:

Potential incidents requiring emergency response procedures:

- Fuel and oil spills;
- Road traffic accidents involving chemical or biological spills;
- Earth slippages;
- Extreme rainfall events, causing swelling of the River Finn;
- Fires;
- Activities resulting in noise and vibration, air pollution, hazardous substances or impacts on water;
- Working within and in vicinity of watercourses;
- Waste management; and,
- Discharge of effluent.

The Contractor will update the list of potential incidents based on their proposed construction methods and programme for the proposed development and include, as a minimum, the following:

- The measures to be taken to reduce the risk potential;
- Procedures to be put in place to deal with the risk;
- Person responsible for dealing with incidents;
- Procedures for alerting key staff;
- Standby/rota systems;
- Clearly defined roles and responsibilities;
- Names of staff and contractors trained in incident response;
- The types and location of emergency response equipment available and appropriate personal protective equipment to be worn;
- A system of response coordination;
- Off-site support; and,
- Particular emergency service or persons to be notified in case of incident.

Date and version of the plan:	**Name or position of person responsible for compiling/approving the plan:**

Review Date:	**Date of next review:**

Objectives of the IRP:

To ensure works are carried out in such a way as to avoid injury, health hazards or pollution incidents, however, should any such incident occur, procedures and measures will be implemented to contain, limit and mitigate the effects as far as reasonably practicable.

List of external organisations consulted in the preparation of the IRP:

TBC by Contractor when preparing IRP

Distribution of the IRP

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Appendix G

Invasive Species Management Plan

Barnesmore Gap Greenway

Appendix 4.1G: Invasive Species Management Plan

Donegal County Council

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1. Introduction

This document comprises project-specific Invasive Species Management Plan (ISMP) for the proposed Barnesmore Gap Greenway (hereafter referred to as "the proposed development") and has been developed in accordance with the TII Guidelines for *The Management of Invasive Alien Plant Species on National Roads – Standard* (TII, 2020a) and *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance* (TII, 2020b).

The ISMP outlines the procedures for the delivery of environmental mitigation measures and for addressing environmental issues specific to Invasive Species that can arise during the construction phase of the proposed development. This document serves to assist the Contractor in preventing, managing, and/or minimising significant environmental impacts relating to Invasive Species.

1.1 Background

Ecological walkover surveys were undertaken along the proposed development at various dates between May – September 2024, May 2025 and April 2026. During the survey, Invasive Alien Plant Species (IAPS) were identified along the proposed development. In the absence of appropriate management, there is a significant risk that IAPS will continue to spread, either independently of or assisted by construction or operational activities associated with the proposed development.

The continued presence of IAPS along the proposed development or the spread of such species to, from or along the proposed development poses a significant threat to biodiversity. Furthermore, the introduction or spread of invasive species, particularly IAPS listed on the Third Schedule to the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) ("the Habitats Regulations"), poses a risk to the proposed development itself, as, in the absence of appropriate preventative measures, any such introduction or spread would constitute an offence under Section 49 of the Habitats Regulations.

The Donegal County Development Plan 2024-2030 (Donegal County Council, 2024) outlines how development should proceed in Donegal, ensuring environmental sustainability and the protection of biodiversity in the county. The following Policy is relevant to invasive species:

BIO-P-4 Ensure that any development proposals do not lead to the introduction or spread of invasive species. Where invasive species are present, development proposals will be required to be submit an appropriate control and management programme for the particular invasive species as part of the planning process and to comply with the provisions of the European Communities Birds and Habitats Regulations 2011 (S.I. 477/2011).

Invasive species are discussed in the Draft Donegal Biodiversity Action Plan 2026-2030, under Objectives 2, 3 and 4:

Action 2.4 Develop a suite of Donegal County Council Policies to address best practice biodiversity management including Invasive Alien Species, Pesticide Reduction and Trees.

Action 3.1 Continue to survey, map and regularly update IAS distribution on Donegal County Council managed land to create a comprehensive and dynamic database.

Action 3.2 Create and implement Invasive Alien Species management plans for key Invasive Alien Species on Donegal County Council managed lands.

Action 3.3 Trial alternative IAS control methods with the view to replicating more widely.

Action 4.4 Through in-person and via online platforms, provide information and guidance to the public, landowners and other stakeholders on a wide range of biodiversity

topics including the All-Ireland Pollinator Plan, Invasive Alien Species and key habitat and species management.

This document comprises the Invasive Species Management Plan for the proposed development and was prepared by ROD-AECOM on behalf on Donegal County Council and will form the basis for the plan which will be adopted if consent for the proposed development is granted.

1.2 Location

The proposed development is located in County Donegal, commencing from Donegal town through to the twin towns Ballybofey/Stranorlar is shown in Figure 1-1, Figure 1-2, Figure 1-3 and Figure 1-4. The proposed development will run predominantly along the historic West Donegal railway line (undesignated) and through the area known as Barnesmore Gap, a scenic glacial valley located within the 'Bluestack Mountains' forming the main mountain pass between north and south Donegal, joining the settlements of Donegal Town and Ballybofey / Stranorlar. The overall length of the Barnesmore Gap Greenway is approximately 30km, with a further 7.5km of spurs and loops which provide additional connectivity and integration to surrounding amenities and active travel routes.

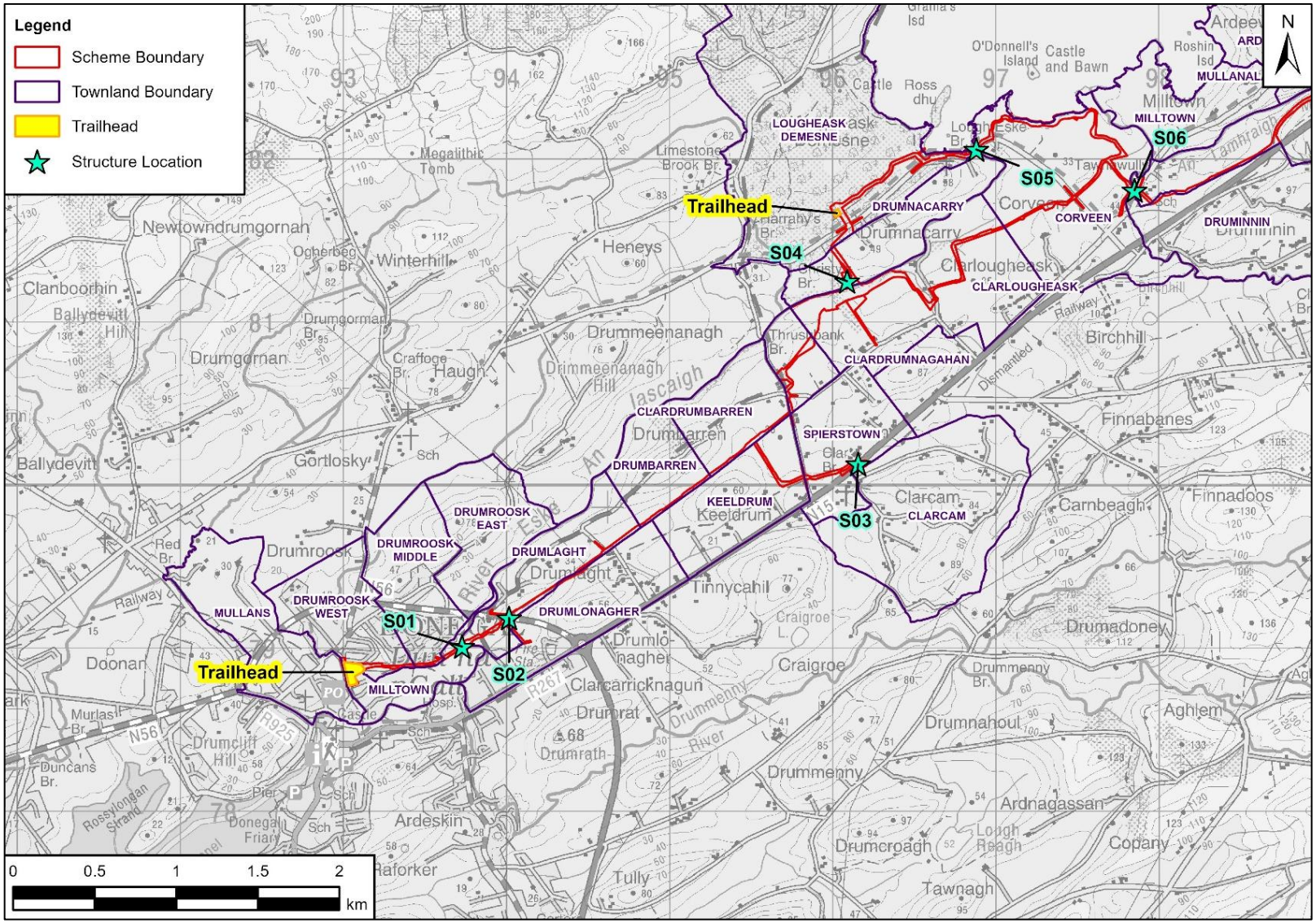

Figure 1-1 - Proposed Route Overview – 1 of 4

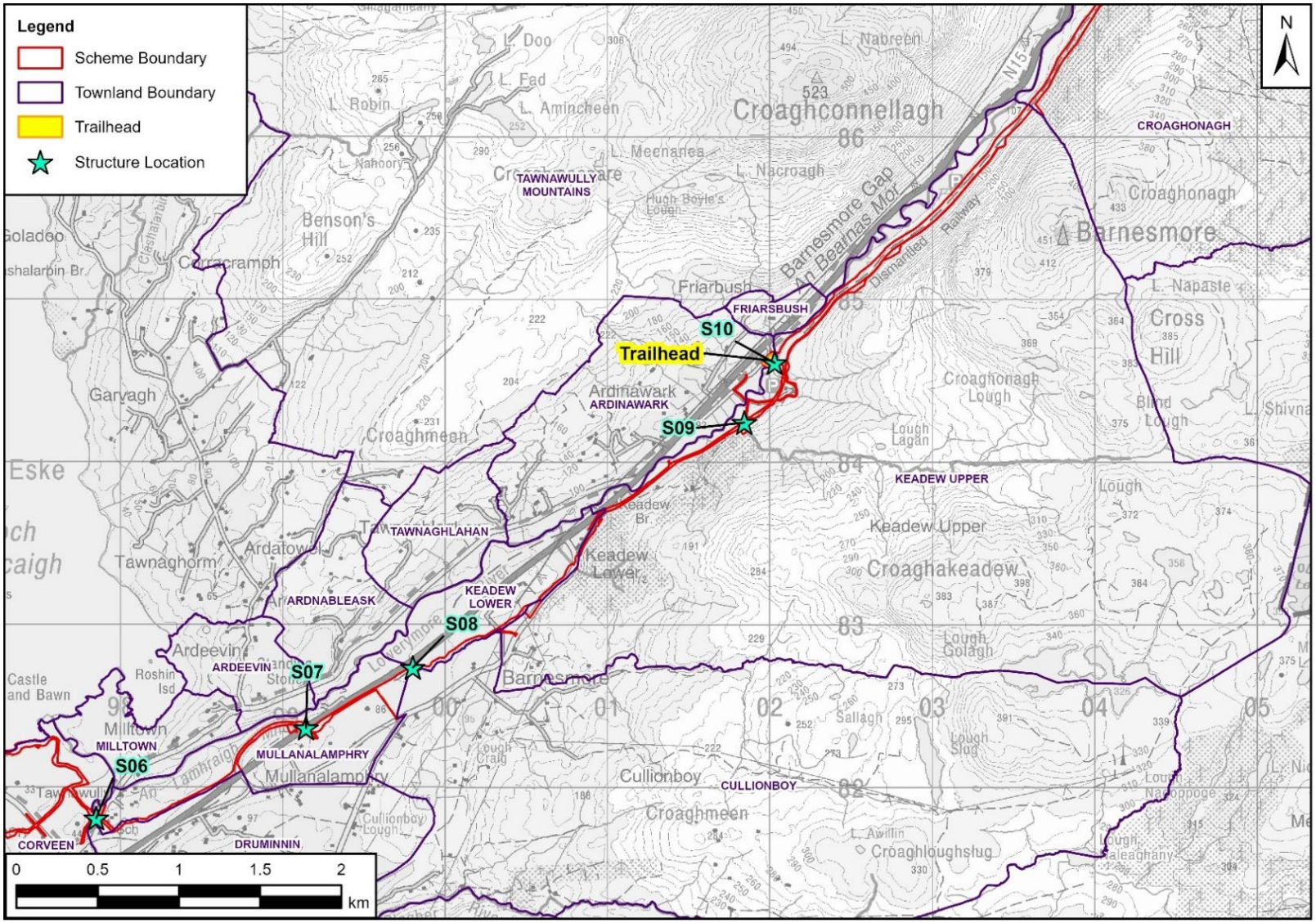

Figure 1-2 - Proposed Route Overview – 2 of 4

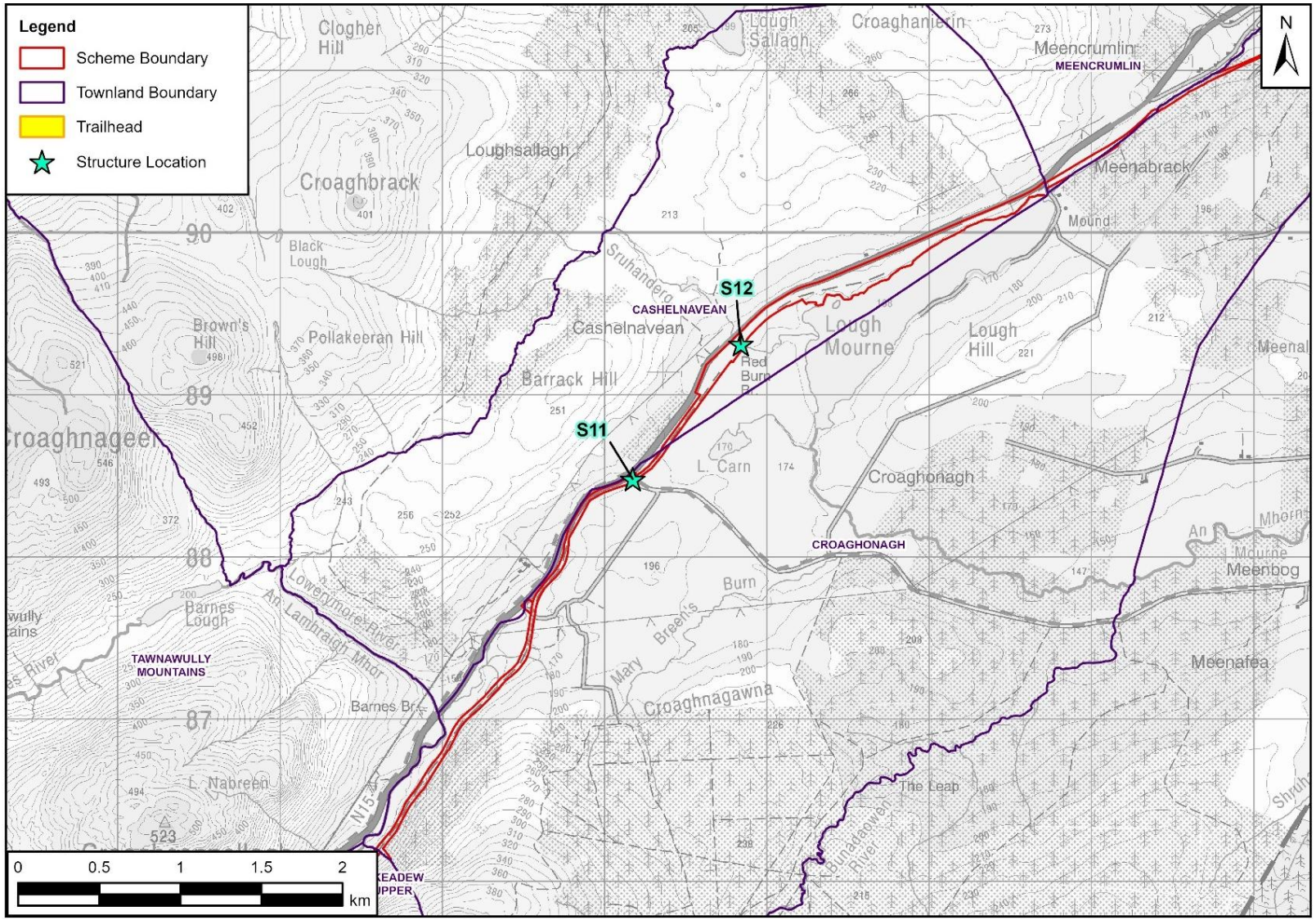

Figure 1-3 - Proposed Route Overview – 3 of 4

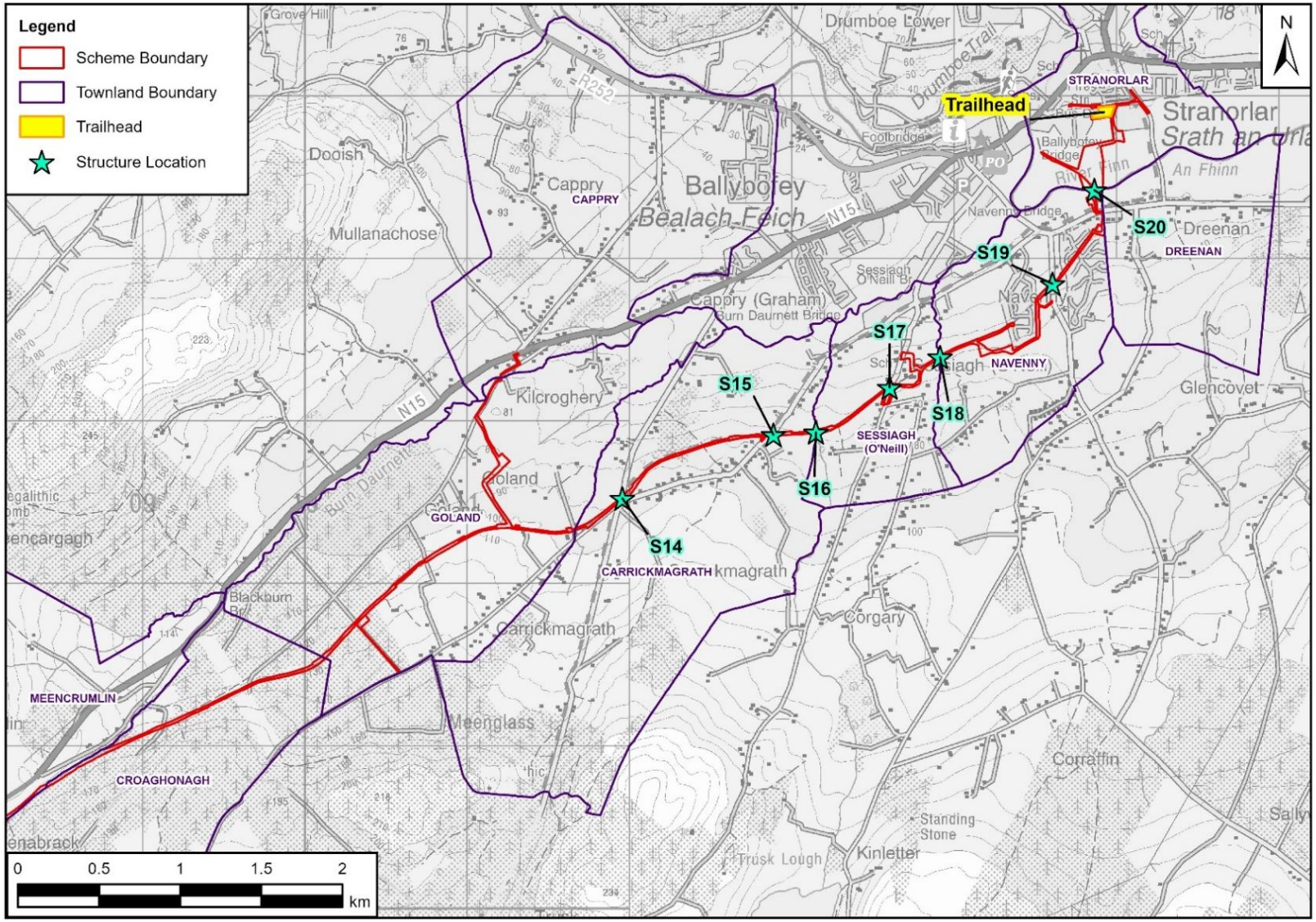

Figure 1-4 - Proposed Route Overview – 4 of 4

1.3 Evaluation of Risk

Prior to preparing this Invasive Species Management Plan, the risk of IAPS both within and in the surrounding area was assessed. This involved the following:

- A desk study to collect existing records of IAPS within 2km of the proposed development boundary.
- An IAPS survey of the site of the proposed development.
- An evaluation of the risk for allowing the spread of IAPS as an offence under the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended).
- An evaluation of the risk of IAPS to biodiversity.

1.4 Purpose of this Plan

The purpose of the Invasive Species Management Plan is:

- To prevent the spread of IAPS within and outside the proposed development boundary during the construction and operational phase.
- To provide clear instructions and a timeline for the monitoring and eradication of IAPS within the site.

2. Methodology

2.1 Desk Study

The purpose of the desk study was to review publicly available information and recent and historical records of IAPS within the footprint of the proposed development and the surrounding area. Records of IAPS within 2km of the proposed development were obtained from the National Biodiversity Data Centre (NBDC) in October 2025.

As with all desk studies, the data considered was only as good as the data supplied by the recorders and recording schemes. The recording schemes provide disclaimers in relation to the quality and quantity of the data they provide, and these were considered when examining the outputs of the desk study.

2.2 Survey Methodology

The presence of invasive alien species was recorded as part of the habitat survey. The ecologists had particular regard for invasive species subject to restrictions under Regulation 49 of the Habitats Regulations. Other invasive species which can negatively impact biodiversity were also recorded. The distribution of recorded species was sketched on field maps and target notes were taken which detailed height, density, and any signs of previous management.

Standard survey methods (TII, 2020a, b) were followed. The surveys were carried out between May – September 2024, May 2025 and April 2026, which fall within the optimal time of year for botanical surveys (April to September).

3. Results

3.1 Desk Study

Table 3-1 lists the invasive plant species listed on the Third Schedule of the Habitats Regulations recorded within the 2km grid squares of the proposed development, sourced from the National Biodiversity Data Centre (NBDC) in October 2025.

Table 3-1 - Records of Third Schedule Invasive Alien Plant Species within the 2km grid squares encompassing the proposed development. Source: NBDC (2025).

Common Name	Scientific Name
Giant Hogweed	*Heracleum mantegazzianum*
Himalayan Balsam	*Impatiens glandulifera*
Himalayan Knotweed	*Persicaria wallichii*
Japanese Knotweed	*Reynoutria japonica*
Rhododendron	*Rhododendron ponticum*

3.2 Field Survey

During the field surveys, five species restricted under Regulation 49 of the Habitats Regulations, namely Japanese Knotweed (*Reynoutria japonica*), Giant Knotweed (*Reynoutria sachalinensis*), Himalayan Knotweed (*Koenigia polystachya*), Rhododendron (*Rhododendron ponticum*) and Himalayan Balsam (*Impatiens glandulifera*) were recorded at various locations along the route of the proposed development. Japanese Knotweed and Giant Knotweed were recorded primarily along the abandoned railway corridor in Donegal Town, with smaller infestations closer to Lough Eske. Rhododendron was prolific in the woodland to the southwest of Lough Eske and large infestations of Himalayan Balsam and Himalayan Knotweed were recorded growing on the northern bank of the River Finn in Ballybofey / Stranorlar. Cherry Laurel was also recorded in large areas to the southwest of Lough Eske. While not restricted under Regulation 49 of the Habitats Regulations, Cherry Laurel is considered to be an invasive species as it outcompetes native species and suppresses regeneration by forming thick stands and avoids herbivory by wildlife (Maguire et al., 2008). The distribution of each species is presented on drawings in Appendix A to this Report.

3.2.1 Japanese Knotweed

3.2.1.1 Ecology and Distribution

Japanese Knotweed (*Reynoutria japonica*) is a member of the Polygonaceae family, which includes docks and rhubarb and is native to Japan and Northern China. This species has become widely distributed throughout Europe and was first recorded in Ireland in the wild in 1902 (Reynolds, 2002). Japanese Knotweed is a threat in open and streamside areas. It can spread rapidly to form dense stands, excluding native vegetation and reducing species diversity. Once stands become established, they are extremely persistent and difficult to remove. This plant has the ability to grow through tarmac and concrete (in some cases within dwellings). Failure to manage Japanese Knotweed on a development site may result in eventual structural damage.

3.2.1.2 Identification

The following provides a brief summary of the defining characteristics of Japanese Knotweed (TII, 2020b):

- It is a fast-growing, robust, perennial plant that rapidly produces dense and extensive vegetation stands. In spring, the plant produces new shoots from rhizome buds on a dense underground crown. These shoots are green, tinged with red/purple and have distinctively rolled leaves; they can appear asparagus-like. As the shoots grow, they extend to produce upright, hollow, bamboo-like green stems, covered in red/purple speckles. The stems can grow to 3m high and achieve a diameter of 40mm in a single season
- The leaves of the mature plant are bright green, heart-shaped, up to 170mm in length with a flattened (truncate) base and pointed tip, and are arranged in a characteristic zig-zag pattern (Figure 3-1). Close examination reveals no or few hairs on the midrib or lateral veins on the underside of Japanese Knotweed leaves. Giant and Bohemian knotweeds have long and short hairs, respectively, on the veins on the underside of the leaves.
- In winter, following leaf die-back, the upright shoots turn deep red or straw-coloured and form characteristic clumps of hollow canes that can remaining standing long into the following season
- The plant flowers between August and October, producing clusters of small creamy-white flowers from the leaf axils (point at which the leaf joins the stem). The flowers occasionally produce dark brown seeds within three-winged seed capsules
- The rhizomes or underground stems are thick (from 5–100mm diameter) and fleshy to woody. The bark of the rhizome is dark brown and the texture is leathery. The nodes along the rhizome are often enlarged and impart a knotty appearance to the rhizome. Small white roots commonly emerge from these nodes. Beneath the bark, the rhizome is bright orange or carrot-coloured. The rhizome system of large plant stands is extensive (extending 15–20m in length) and acts as a storage organ, allowing for rapid growth in spring.

Figure 3-1 - Japanese Knotweed recorded within redline boundary of proposed development at Ch. 810.

3.2.2 Giant Knotweed

3.2.2.1 Ecology and Distribution

Giant Knotweed (*Reynoutria sachalinensis*) is a member of the Polygonaceae (docks and rhubarb family), native to Japan and Sakhalin Island, Russia. It is a tall (up to 5m), herbaceous perennial with green, bamboo-like stems that forms dense patches, which exclude native plant species, thereby reducing native biodiversity. The leaves of Giant Knotweed are cordate (i.e. notched or indented at the base) and can grow up to 40cm in length. Giant Knotweed is relatively widespread in Ireland but is not found to the same extent along roadsides as Japanese Knotweed (Figure 3-2).

Figure 3-2 - Giant Knotweed recorded within redline boundary of proposed development at Ch. 130 south of the existing Railway Road.

3.2.3 Himalayan Knotweed

3.2.3.1 Ecology and Distribution

Himalayan Knotweed is a member of the Polygonaceae (docks and rhubarb family), native to the Himalayas and the western temperate regions of Asia. It is an herbaceous perennial that rarely exceeds 1.5m in height. Similar to the other knotweed species detailed in Sections 3.2.1 and 3.2.2, Himalayan Knotweed grows vigorously and creates dense, widespread stands that exclude native vegetation (Figure 3-3).

3.2.3.2 Identification

The following provides a brief summary of the defining characteristics of Himalayan Knotweed (TII, 2020b):

- Its leaves are lanceolate, cordate (notched or indented at the base), with entire margins, a red midrib and pointed tip. A brown sheath persists at the base of the leaf stalk.
- Its bamboo-like stems are circular, typically green but may also have a red/green coloration and are almost solid in cross-section.
- It produces small white or pink flowers that are loosely clustered.
- It flowers in late summer to early autumn and dies back in the winter, leaving stands of dead brown canes.
- It has an extensive underground rhizome system.
- Dispersal typically occurs through rhizome fragments or vegetative reproduction from plant fragments.

Figure 3-3 - Himalayan Knotweed recorded within redline boundary adjacent to the River Finn, upstream of the existing piers at Ch. 29520.

3.2.4 Rhododendron

3.2.4.1 Ecology and Distribution

Rhododendron is a perennial evergreen, acid-loving shrub that was introduced to Ireland in the 18th Century. It is native to south-west Europe and south-west Asia. There are more than 900 species of Rhododendron, but only *Rhododendron ponticum* is invasive in Ireland. Since then, it has established itself as a major weed of acid woodlands, most notably in Kerry and Donegal where concerted efforts to control it have been ongoing for many decades (Figure 3-4). It is only likely to be a problematic species on road schemes in areas of acid or peaty soils.

The seeds are primarily dispersed by wind and can persist in soils for up to three years. The plant can also spread by vegetative means where plants sucker or throw up new sprouts from roots as well as from branches (layering). It forms dense thickets that can exclude all light from the understorey thereby eliminating herbaceous plants and preventing the natural regeneration of trees and shrubs. It can withstand considerable shade and thrives as an understorey species in woodland, although it also tolerates open conditions in suitable acid soils.

Its dense tangle of stems, commonly referred to as thickets, can block pathways, smother watercourses and encroach on roadways, thereby impinging on sightlines and reducing the

capacity of the road to dry out. The dense foliage of Rhododendron can reach several metres in height, creating a dark sterile environment that outcompetes native flora. The leaf litter produced by the plant contains various compounds that have an allelopathic action on other species (inhibiting their growth), which may further inhibit native flora from growing within close proximity. These toxins, which include 'free' phenols make the plant unpalatable to most herbivores and grazing animals.

Rhododendron ponticum is also a carrier of the fungus-like pathogen *Phytophthora ramorum* that causes 'Sudden Oak Death', which can cause significant damage to a wide range of native flora.

3.2.4.2 Identification

The following provides a brief summary of the defining characteristics of Rhododendron (TII, 2020b):

- It is a woody shrub or small tree growing up to 8m in height.
- As a member of the Ericaceae (heather family) and grows optimally on soils with a low pH.
- It has oval, waxy leaves up to 18cm in length, which are darker above than below. The leaves are produced in a spiral at the end of each stem.
- The roots are relatively shallow, seldom being deeper than 45cm, and typically extend uphill from the plant.
- The bell-shaped flowers are produced in a cluster at the tips of branches and can vary in colour from pink to various shades of purple.

Figure 3-4 - Extensive Rhododendron recorded in woodland within redline boundary southwest of Lough Eske.

3.2.5 Himalayan Balsam

3.2.5.1 Ecology and Distribution

Himalayan Balsam (*Impatiens glandulifera*) is a member of the 'Busy lizzie' family (Balsaminaceae) and, as its name suggests, is native to the Himalaya region of Asia. Since its introduction in the 1800s, Himalayan Balsam swiftly became established along waterways and in other damp places as a result of its prolific seed production. It is an annual plant, forming dense stands up to 3m tall, which effectively shade out and competitively exclude native herbs and grasses. The leaves are up to 20cm long, stalked, broadly lanceolate with distinctly serrated margins and a pointed tip. They are arranged in opposite pairs or in loose whorls of 3–5. They are pale green with a red midrib. It is tolerant of shade and grows abundantly in or adjacent to riparian woodland. In the autumn, it dies back leaving the ground bare and vulnerable to erosion by winter floods. Himalayan Balsam is widespread throughout the country, but it is particularly prevalent in the north and south-east (Figure 3-5).

3.2.5.2 Identification

The following provides a brief summary of the defining characteristics of Himalayan Balsam (TII, 2020b):

- It is an erect and hairless plant that can grow up to 3m in height.
- The stems are tall, erect, hollow, succulent, reddish and hexagonal in cross section.
- The plant produces an abundance of attractive white to pink/purple flowers in racemes. They are trumpet-shaped and mildly scented.
- The seed capsules are up to 25mm long, green to red and hang from a short red stalk. When ripe, the capsules open explosively, propelling the small black seeds up to 7m from the parent plant, which gives it a considerable edge in colonizing new ground. The seeds can remain viable for up to 18 months and are readily dispersed in water.
- Germination commences in February and first young plants are normally apparent in early April. Flowering commences in June and can extend into October.

Figure 3-5 - Himalayan Balsam recorded within redline boundary adjacent to the River Finn, downstream of the existing piers at Ch. 29520.

4. Control and Management Procedures

The management measures described below are based on the following guidance documents:

- DCC (2026) *Draft County Donegal Biodiversity Action Plan 2026-2030*. Donegal County Council.
- DCC (2024) *County Donegal Development Plan 2024-2030*. Donegal County Council.
- DCC (2016) *Invasive Alien Plant Species Information Booklet.* Donegal County Council.
- Higgins, G.T. (2008) Rhododendron ponticum: *A guide to management on nature conservation sites*. Irish Wildlife Manuals, No. 33. National Parks and Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland.
- IFI (2013) *Best Practice Control of Himalayan Balsam* Impatiens glandulifera. Inland Fisheries Ireland.
- Kelly, J., Maguire, C.M. and Cosgrove, P.J., Muir, R.A. (2015). *Best Practice Management Guidelines Japanese knotweed* Fallopia japonica. Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- Maguire, C.M., Kelly, J. and Cosgrove, P.J. (2008). *Best Practice Management Guidelines* Rhododendron ponticum *and Cherry Laurel* Prunus laurocerasus. Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- TII (2020a) The *Management of Invasive Alien Plant Species on National Roads – Standard.* Transport Infrastructure Ireland, Dublin.
- TII (2020b) *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance*. Transport Infrastructure Ireland, Dublin.

4.1 General Control and Management Procedures

In order to minimise risk of introduction or spread of IAPS during construction, all works shall be executed in accordance with best practice for biosecurity in construction. It will be a condition of the Construction Contract for the construction of the proposed development that, prior to commencement, the successful Contractor shall prepare a detailed Biosecurity Protocol describing their proposed approach to ensuring that IAPS are not imported or spread during the construction of the proposed development. The Contractor's Biosecurity Protocol shall be in accordance with *The Management of Invasive Alien Plant Species on National Roads – Standard* (TII, 2020a) and *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance* (TII, 2020b) and subject to approval by the Ecological Clerk of Works (ECoW) prior to its acceptance and implementation. The Biosecurity Protocol is a live document and will be updated by the Contractor as needed throughout the construction of the proposed development. It will be the duty of the successful Contractor to ensure that all sub-contractors fully adhere and implement the procedures and measures of the Biosecurity Protocol. The Biosecurity Protocol shall include, as a minimum, the following measures to prevent the spread of invasive species:

- All plant and equipment employed on the construction site (e.g. excavators) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of IAPS.
- All washing must be undertaken in areas with no potential to result in the spread of IAPS.
- Any soil and topsoil required on the site will be sourced from a stock that has been screened for the presence of any IAPS and where it is confirmed that none are present.

The known infestations of invasive species shall be eradicated prior to commencement of construction. The measures outlined below shall be followed to assist in the eradication of these species from the site:

- A preconstruction invasive species survey will be carried out during the optimum surveys season in advance of construction.
- No material will leave the site from the isolated invasive species areas.
- No new materials will be stored adjacent to invasive species areas.
- No movement of invasive species contaminated material will occur across the site unless on designated haul routes, avoiding invasive species isolated areas.
- All personnel on the site will attend a 'toolbox talk' as part of the site induction. The toolbox talk will include the identification of invasive species.

4.2 Specific Control and Management Procedures

4.2.1 Japanese Knotweed

The above ground stems of Japanese Knotweed will be mapped in detail to inform future buffers and excavations. The boundary of the stands will be marked with pegs sprayed with a bright colour. An exclusion zone of 10m will be established around Japanese Knotweed stands and will be demarcated with hazard tape and warning signs around this so no workers or plant accidentally enter the exclusion zone. This exclusion zone will remain in place until the management of Japanese Knotweed is complete. No workers or plant may track through contaminated areas or exclusion zones to access other areas of the proposed development.

The Biosecurity Protocol for Japanese Knotweed management will follow best practice guidance. At the time of writing a process called 'Eraginate' is the best method available. The final plan will be dependent on the method statement written by the contractor. A detailed description of the Eraginate process is presented in Appendix B. The process essentially involves a treatment with herbicide followed by excavation. The material is screened to remove canes, crowns and rhizomes. Once the screening is completed, the leftover soil can be re-used in the development below a 400mm clean cap if it is being used as a growing medium. It is recommended that the soil is reused in one location, to simplify future monitoring and treatment of any regrowth. The treated material does not have to be bunded or fenced off. The canes, crowns and rhizomes will be treated off-site at a licenced facility.

It is possible that given certain topographical and environmental constraints, the soil will not be screened at the location of the infestation. If this is the case and the material is screened off site, designated haul routes and a designated treatment area, along the cleaning areas, will be established.

A method statement will be in place to ensure that water quality is protected, and the Japanese Knotweed is not spread within or outside the proposed development area.

The original site of infestation and the location of treated soil will be monitored closely during the construction phase to ensure that any Japanese Knotweed is eradicated immediately. Two successive years of no regrowth will confirm the area free from Japanese Knotweed.

Infested material will be moved by designated plant only, via internal access tracks to be constructed within vested land. A specialist contractor will be appointed to oversee excavation & transport, biosecurity and treatment as necessary.

4.2.1.1 Japanese Knotweed Operational Control and Post-construction Monitoring

Monitoring will be carried out yearly until two successive years of no regrowth are detected. Treatment of Japanese Knotweed will continue as per Donegal County Council's current invasive species management plans. Donegal County Council will continue treatment of Japanese Knotweed on the land owned by DCC, to ensure that it is fully eradicated from the

area and it does not spread back into the proposed development boundary from adjacent lands.

The recommended measures set out in this plan are valid for the construction phase of the proposed development.

4.2.2 Giant Knotweed

Similar to Japanese Knotweed, Giant Knotweed is most commonly spread by rhizomes and eradication of this species shall follow the process identified for Japanese Knotweed, as presented in Section 4.2.1 above.

4.2.3 Himalayan Knotweed

Similar to Japanese Knotweed, Himalayan Knotweed is most commonly spread by rhizomes and eradication of this species shall follow the process identified for Japanese Knotweed, as presented in Section 4.2.1 above.

4.2.4 Rhododendron

The areas infested with Rhododendron within the proposed development area will be mapped in detail during the pre-construction survey.

Physical Control

The following refers to the methodology presented in *Best Practice Management Guidelines: Rhododendron* (Rhododendron ponticum) *and Cherry Laurel* (Prunus laurocerasus) (Maguire et al., 2008). Rhododendron will be managed during the construction stage through initial cut and removal of stems using a flail or similar, cutting as close to the ground as possible to remove above ground growth.

In areas within the Greenway footprint, the surface layer of soil will be removed along with the cut material. This material will be contaminated with Rhododendron and/or Cherry Laurel seeds. This material will form the greenway verges and will be maintained annually which will prevent these species reestablishing. These species are widespread in Ardnamona Wood in areas outside the proposed development and therefore complete eradication is not being considered.

In areas within the red line boundary but outside the footprint of the greenway and verges, Rhododendron and Cherry Laurel will be managed during the construction stage through an initial cut and removal of stems using a flail or similar, cutting as close to the ground as possible to remove above ground growth.

The cut material will be chipped or removed from the area to allow for effective follow-up work and prevent regrowth. Chipped material can provide good weed barrier around ornamental garden areas. The removal of above ground growth will not prevent regrowth as Rhododendron and Cherry Laurel will regrow from cut stems and stumps. There are four recommended methods to achieve successful management after the initial cut and removal:

1. Digging the stumps out. The effectiveness of this technique is increased by removing all viable roots. This can be done manually or with a tractor and plough. To avoid regrowth, stumps shall be turned upside down and soil shall be brushed off roots.
2. Direct stump treatment by painting or spot spraying freshly cut low stumps with a herbicide immediately after being cut. Glyphosate (20% solution), tryclopyr (8% solution) or ammonium sulphate (40% solution) are known to be effective during suitable weather conditions i.e. dry weather. The herbicide concentrations used and timings of applications vary according to which chemical is used. Use of a vegetable dye is recommended to mark treated stumps and all stumps shall be targeted. A handheld applicator will help avoid spray drift onto surrounding non-target species. Herbicides selected by the Contractor will be subject to approval by the ECoW prior to usage.
3. A variation on the stump treatment method is stem injection, using a ‘drill and drop’ methodology, whereby, if the main stem is cut and is large enough for a hole to be

drilled into it, the hole can be used to facilitate the targeted application of glyphosate (25% solution). The main drawback is that the dead Rhododendron may persist in situ for 10-15 years.

4. Stump regrowth and seedlings can be effectively killed by spraying regrowth with a suitable herbicide, usually glyphosate. Best practice spraying protocols shall be carefully followed. General broadcast spraying is not as effective as stump spot treatment and has the potential to impact on surrounding non-target species. Rhododendron leaves are thick and waxy. For herbicide treatment to be effective each individual leaf needs be thoroughly wetted with herbicide to kill the plant. Herbicides selected by the Contractor will be subject to approval by the ECoW prior to usage.

4.2.5 Himalayan Balsam

The pre-construction survey will establish the distribution and abundance of the Himalayan Balsam in the proposed development area. The survey will mark the location of all stands, recording the size and percentage cover of each stand. The percentage cover and habitats present shall also be recorded.

Ideally, Himalayan Balsam control shall be undertaken from late April or early May, before the seed capsules appear and when the plants are approx. 1m high. As research has shown that the seeds present in the soil can remain viable for up to two years, repeated control over a number of years in the target area is required to achieve eradication.

4.2.5.1 Physical Control

Manual removal (hand-picking) is the optimal method of control, especially to treat low density or small infestations. This species was recorded on the River Finn. The works in these areas are limited to localised repointing of the piers. The aim of controlling this species at the piers is to prevent workers from spreading seeds outside the site. Himalayan Balsam must be controlled throughout the catchment where it occurs. In the case of this project, seeds will wash into the area from upstream and therefore long-term eradication is not feasible.

To manually remove the plants in advance of the works, the plants shall be gripped about 0.5 metre above the ground and carefully pulled. As the plants tend to grow in dense patches, it is often possible to remove two or more plants in one go. The minimum pressure is normally required to remove the root in its entirety from the ground due to its shallow root. Having removed the balsam plant from the ground, the pulled plants shall be broken to discourage flowering, which can occur even with plants that have been removed from the ground. The broken plants can be placed in piles to rot naturally. Covering the piles with a layer of jute material in order to eliminate light can hasten its demise and ensure that it will not flower and set seed. The jute will rot down with the composting balsam plants.

Considering that the proposed development will not spread this species during the operational phase i.e. the greenway is on the bridge deck high above the riverbank where this species occurs, the long-term treatment of this species is not required.

4.2.5.2 Himalayan Balsam Post-Construction Monitoring

Depending on the duration of the works on the piers in the River Finn, repeated visits may be required to pull any new plants in the works area, including a buffer. This will reduce the risk of seeds leaving the site on workers or their equipment.

5. Training and Operative Competency

5.1 Legislative Context

A suitably qualified person with sufficient training, experience, and knowledge in the control of IAPS shall be employed to assist in the planning and execution of control measures in relation to the invasive species listed above, namely Japanese Knotweed, Giant Knotweed, Rhododendron and Himalayan Balsam. While treating invasive species, operators must comply with all legislation regulating the treatment and management of invasive species. The relevant standards and legislation that will dictate how eradication is undertaken include:

- European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) (S.I. No. 477 of 2011);
- European Communities (Sustainable Use of Pesticides) Regulations, 2012 (S.I. No. 155 of 2012);
- European Communities (Plant Protection Products) Regulations, 2012 (S.I. No. 159 of 2012);
- Safety, Health and Welfare at Work Act, 2005;
- Safety, Health and Welfare at Work (Construction) Regulations, 2013;
- Safety, Health and Welfare at Work (General Application) Regulations, 2007;
- Waste Management Acts, 1996 to 2013, and related legislation; and,
- Wildlife Act, 1976 (as amended) ("the Wildlife Act").

Registered Pesticide Advisors

Should the contractor propose to use herbicide to treat invasive species, they will need to ensure that the personnel undertaking the treatment have appropriate training and are registered.

Training

The Sustainable Use of Pesticides Directive requires Member States to '[...] *set up systems of both initial and additional training for* [...] *professional users of pesticides and certification systems to record such training so that those who use or will use pesticides are fully aware of the potential risks to human health and the environment and of the appropriate measures to reduce those risks as much as possible*.'[1] Regulation 5(1) of the European Communities (Sustainable Use of Pesticides) Regulations, 2012,[2] which came into effect on the 26th of November, 2015,[3] states that a professional user of pesticides shall, subject to exception, '*hold a certificate confirming that the professional user has been trained to a standard determined by the Minister in the subjects listed in Annex I of the Directive*', and '*comply with any additional training requirements as determined by the Minister*.'[4]

Register of Professional Users

Regulation 4 of the European Communities (Sustainable Use of Pesticides) Regulations, 2012, grants the Minister for Agriculture, Food and the Marine the power to establish a register of professional users and any class or classes of professional users.[5] The Minister is also granted the power to set conditions for registration.[6] Information relating to professional users

[1] Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides Recital 8 of the Preamble.

[2] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012) Regulation 5(1).

[3] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012) Regulation 2(1).

[4] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012) Regulation 5.

[5] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012) Regulation 4(1).

[6] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012) Regulation 4(2).

and the register is available on the website of the Pesticide Registration and Controls Divisions (PRCD) of the Department of Agriculture, Food and the Marine (DAFM): http://www.pcs.agriculture.gov.ie/sud/professionalusersprayeroperators/

Specific Areas

The Sustainable Use of Pesticides Directive[7] and related Irish transposing Regulations[8] place additional restrictions and, in some cases, prohibitions, on the use of pesticides in certain specified areas. Such areas include: areas for the abstraction of drinking water; transport routes (such as railway lines); areas with sealed or very permeable surfaces; groundwater vulnerable areas; areas used by the general public or defined vulnerable groups; and, European sites.

In relation to '*Specific Areas'*, Regulation 12(1) of the Sustainable Use of Pesticides Regulations provides that, subject to paragraph (2), a person shall not apply a pesticide in:

a) areas used by the general public or by defined vulnerable groups;[9] and,

b) a European site.[10]

'Vulnerable groups' are defined in the Plant Protection Product Regulation to mean *'persons needing specific consideration when assessing the acute and chronic health effects of plant protection products*' and include '*pregnant and nursing women, the unborn, infants and children, the elderly and workers and residents subject to high pesticide exposure over the long term.*'[11] The term 'European Site' is defined in the European Communities (Birds and Natural Habitats) Regulations, 2011, and includes special areas of conservation and special protection areas.[12] Regulation 12(2) of the Sustainable Use of Pesticides Regulations states, inter alia: '*Where a person, having completed a risk assessment, is obliged to use a pesticide in [a specified] area [...] he or she shall ensure that preference is given to the use of low risk plant protection products or biological and cultural control measures and where such measures are not capable of performing the necessary function, a person shall prioritise the use of plant protection products that are not classified as R50 [...].*'[13] Regulation 12(3) provides further:

Where a person uses a pesticide in an area referred to in paragraph (1) the onus of proof will lie with that person to show that there was no viable alternative and appropriate risk management measures were put in place.[14]

[7] Directive 2009/128/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for Community action to achieve the sustainable use of pesticides.

[8] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012).

[9] Regulation 12(1)(a) of the European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012).

[10] Regulation 12(1)(b) of the European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012).

[11] Article 3(14) of the Regulation (EC) No. 1107/2009 of the European Parliament and of the Council of 21 October 2009 concerning the placing of plant protection products on the market and repealing Council Directives 79/117/EEC and 91/414/EEC.

[12] Regulation 2(1) of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) (S.I. No. 477 of 2011).

[13] Regulation 12(2) of the European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012).

[14] European Communities (Sustainable Use of Pesticides) Regulations, 2012, (S.I. No. 155 of 2012) Regulation 12(3).

6. Summary

Five invasive species listed on the Third Schedule was identified during the ecology surveys undertaken for the proposed development, namely Japanese Knotweed, Giant Knotweed, Himalayan Knotweed, Rhododendron and Himalayan Balsam.

The successful Contractor will develop an invasive species method statement and Biosecurity Protocol which will be informed by this management plan and any future surveys, detailed design of the proposed development, cost for treatment, the programme for the scheme and safety. This will be undertaken for each area to ensure that invasive species are treated appropriately and not spread within or outside the proposed development site.

7. References

DCC (2026) *Draft Donegal Biodiversity Action Plan 2026-2030*. Donegal County Council.

DCC (2024) *County Donegal Development Plan 2024-2030*. Donegal County Council.

DCC (2016) *Invasive Alien Plant Species Information Booklet.* Donegal County Council.

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European Communities (Sustainable Use of Pesticides) Regulations, 2012. S.I. No. 155 of 2012.

European Communities (Plant Protection Products) Regulations, 2012. S.I. No. 159 of 2012.

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Reynolds, S.C.P. (2002) *A catalogue of alien plants in Ireland*. National Botanic Gardens. Glasnevin, Dublin.

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Safety, Health and Welfare at Work (Construction) Regulations, 2013. S.I. No. 291 of 2013.

Safety, Health and Welfare at Work (General Application) Regulations, 2007. S.I. No. 299 of 2007.

TII (2008) *Guidelines for Ecological Survey Techniques for Protected Flora and Fauna during the Planning of National Road Schemes*. Transport Infrastructure Ireland, Dublin.

TII (2020a) *The Management of Invasive Alien Plant Species on National Roads – Standard.* GE-ENV-01104. Transport Infrastructure Ireland, Dublin.

TII (2020b) *The Management of Invasive Alien Plant Species on National Roads – Technical Guidance*. GE-ENV-01105. Transport Infrastructure Ireland, Dublin.

Waste Management Acts, 1996 to 2013. No. 10 if 1996.

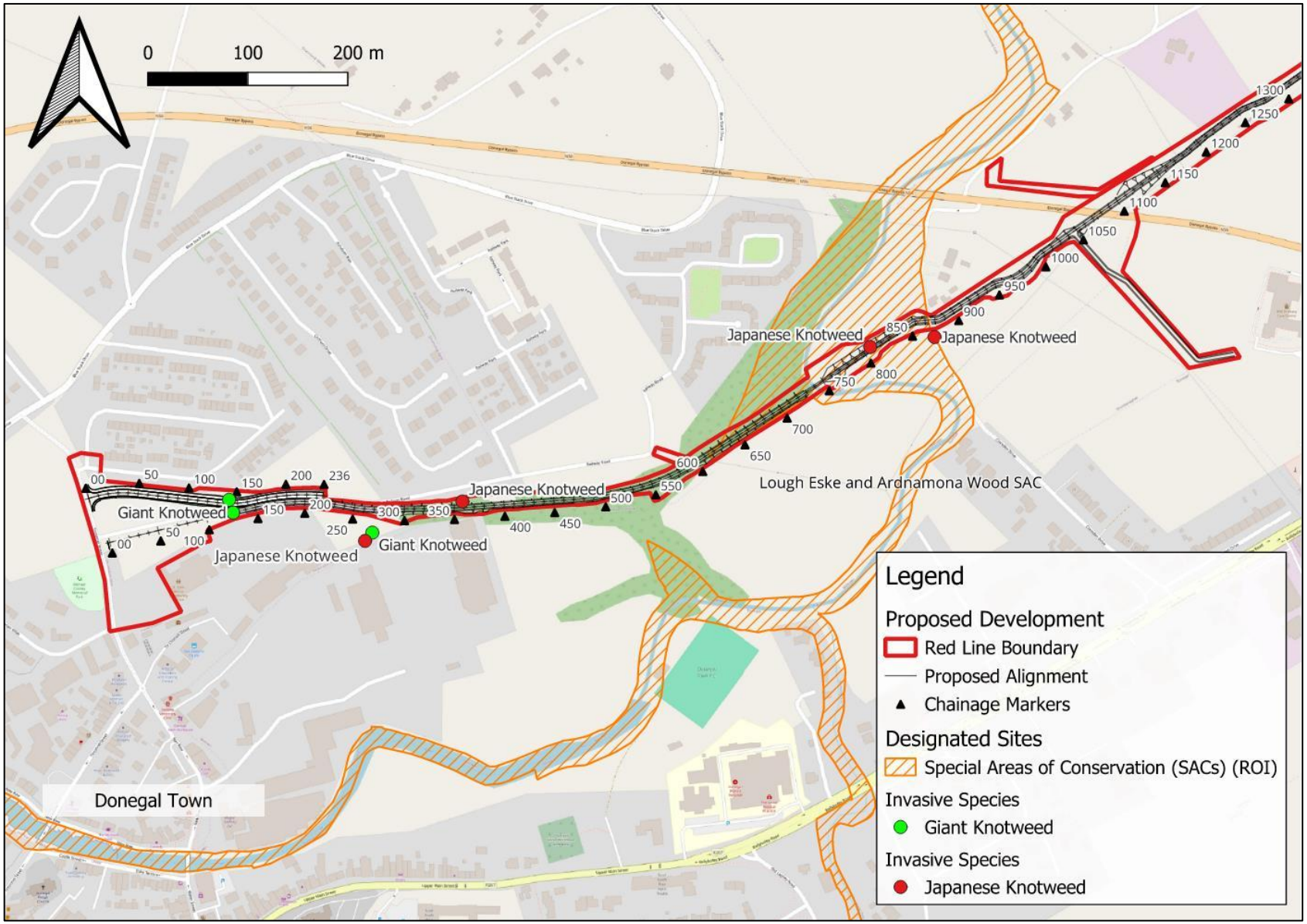
Wildlife Act, 1976. No. 39 of 1976.

Wildlife Act, 1976 (Protection of Wild Animals) Regulations, 1990, SI No. 112/1990.

Wildlife (Amendment) Act, 2000. No. 38 of 2000.

Wildlife (Amendment) Act, 2012. No 29 of 2012.

APPENDIX A
INVASIVE SPECIES MAPPING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Legend
Proposed Development
Red Line Boundary
Proposed Alignment
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
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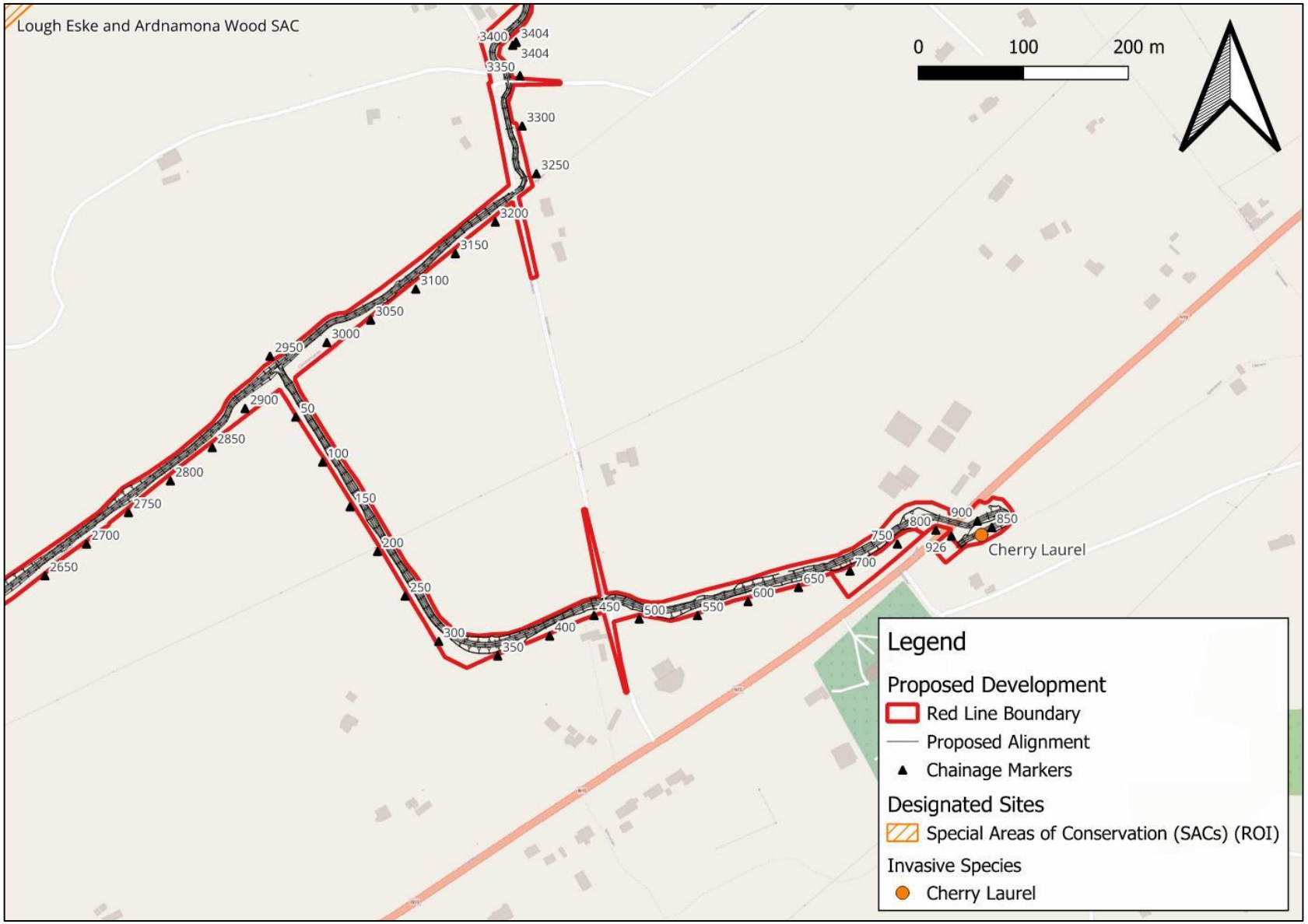
Invasive Species
Japanese Knotweed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Cherry Laurel
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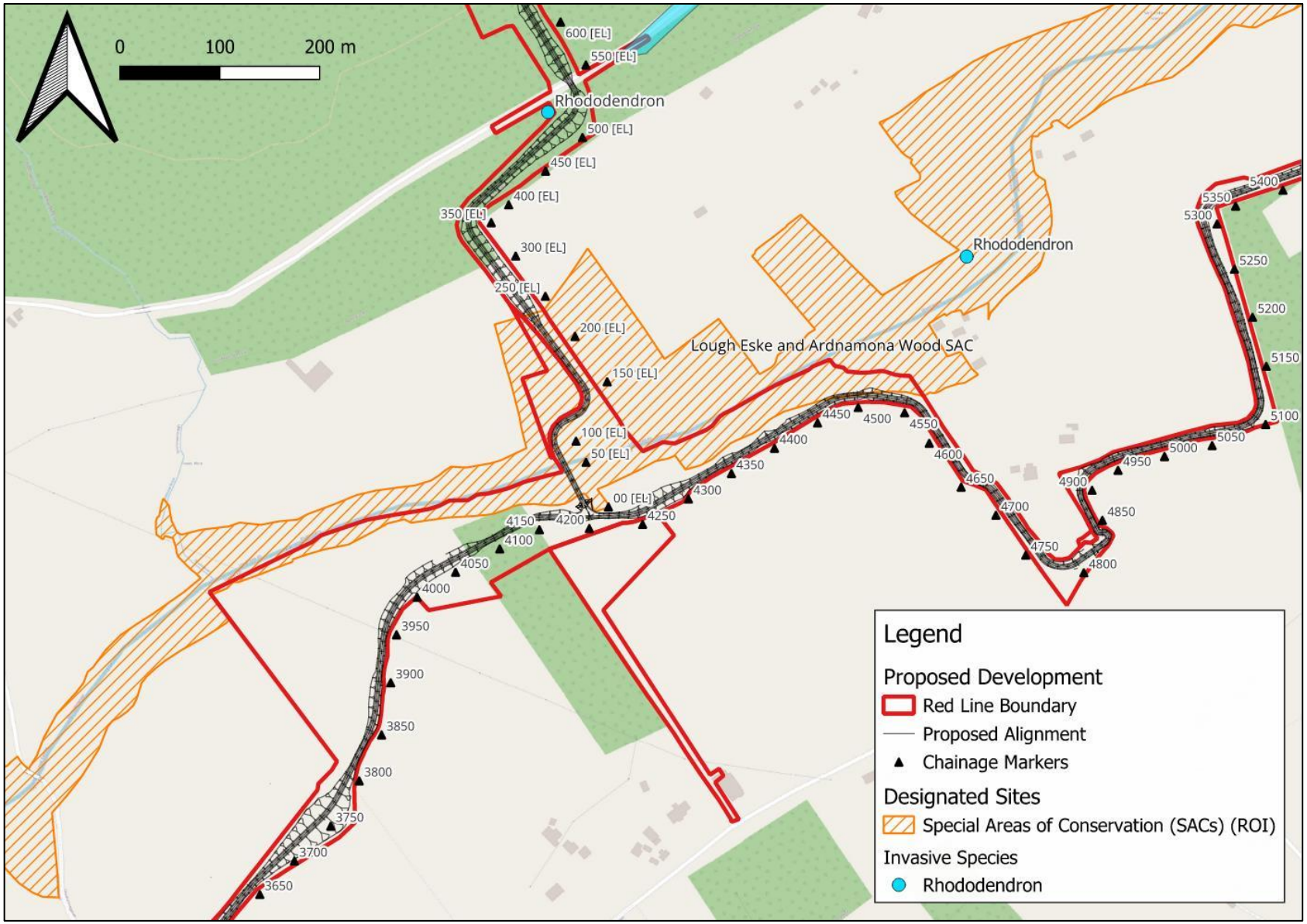
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
Cherry Laurel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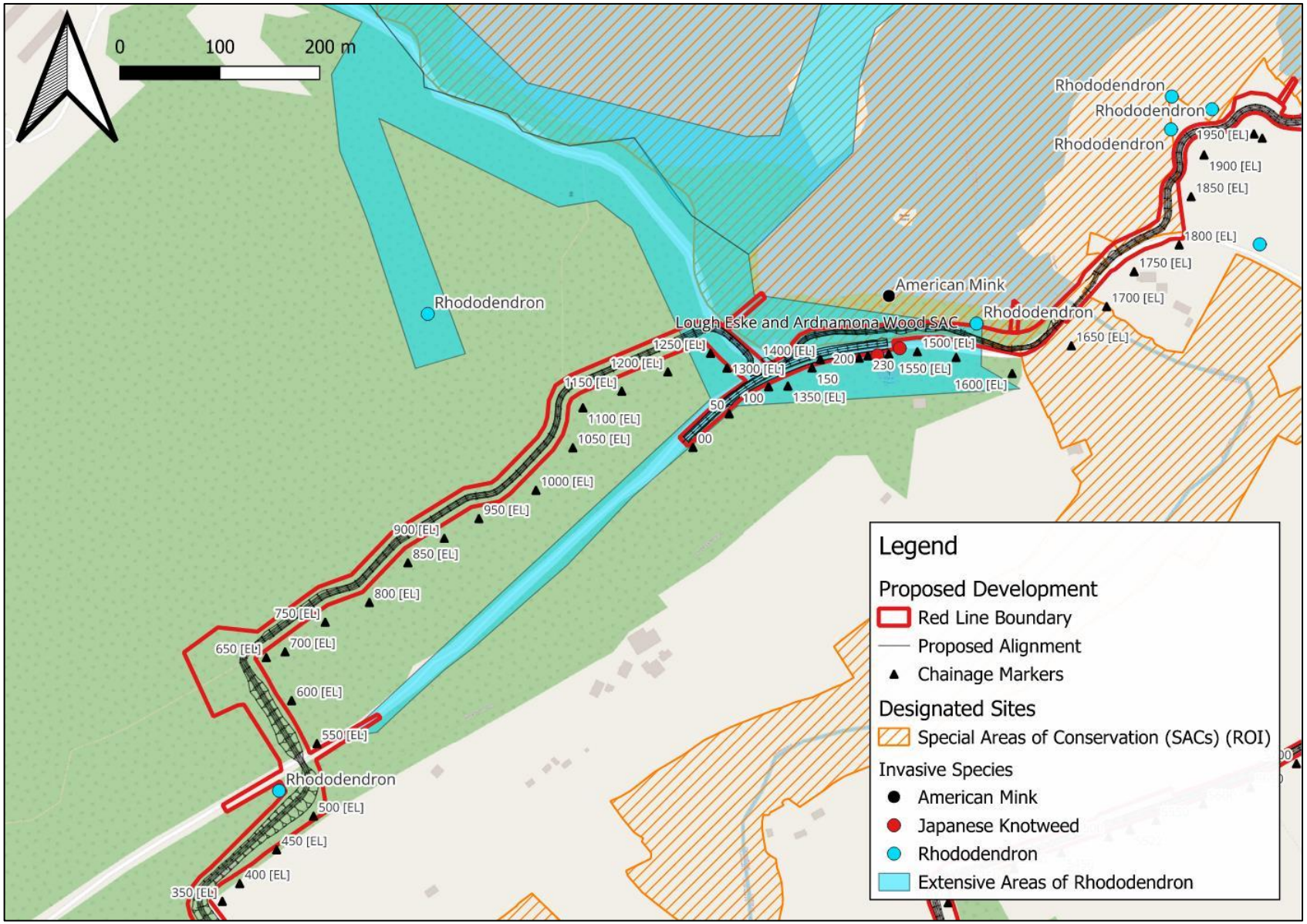
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
Rhododendron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Legend
Proposed Development
Red Line Boundary
Proposed Alignment
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
American Mink
Japanese Knotweed
Rhododendron
Extensive Areas of Rhododendron

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Rhododendron
Rhododendron
Lough Eske and Ardnamona Wood SAC
American Mink
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Legend
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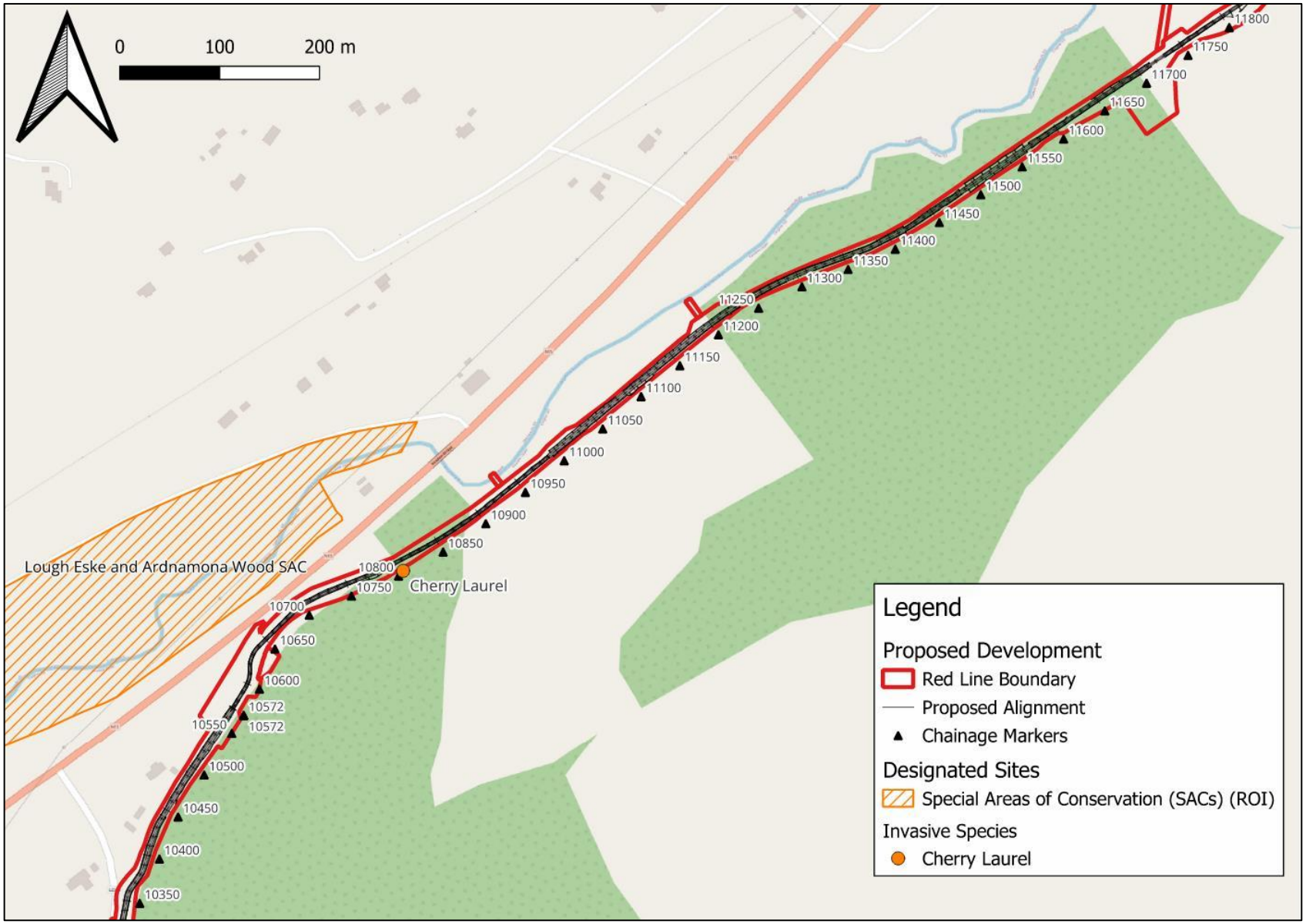
Proposed Alignment
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
American Mink
Rhododendron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Lough Eske and Ardnamona Wood SAC
Cherry Laurel
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10750
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Proposed Development
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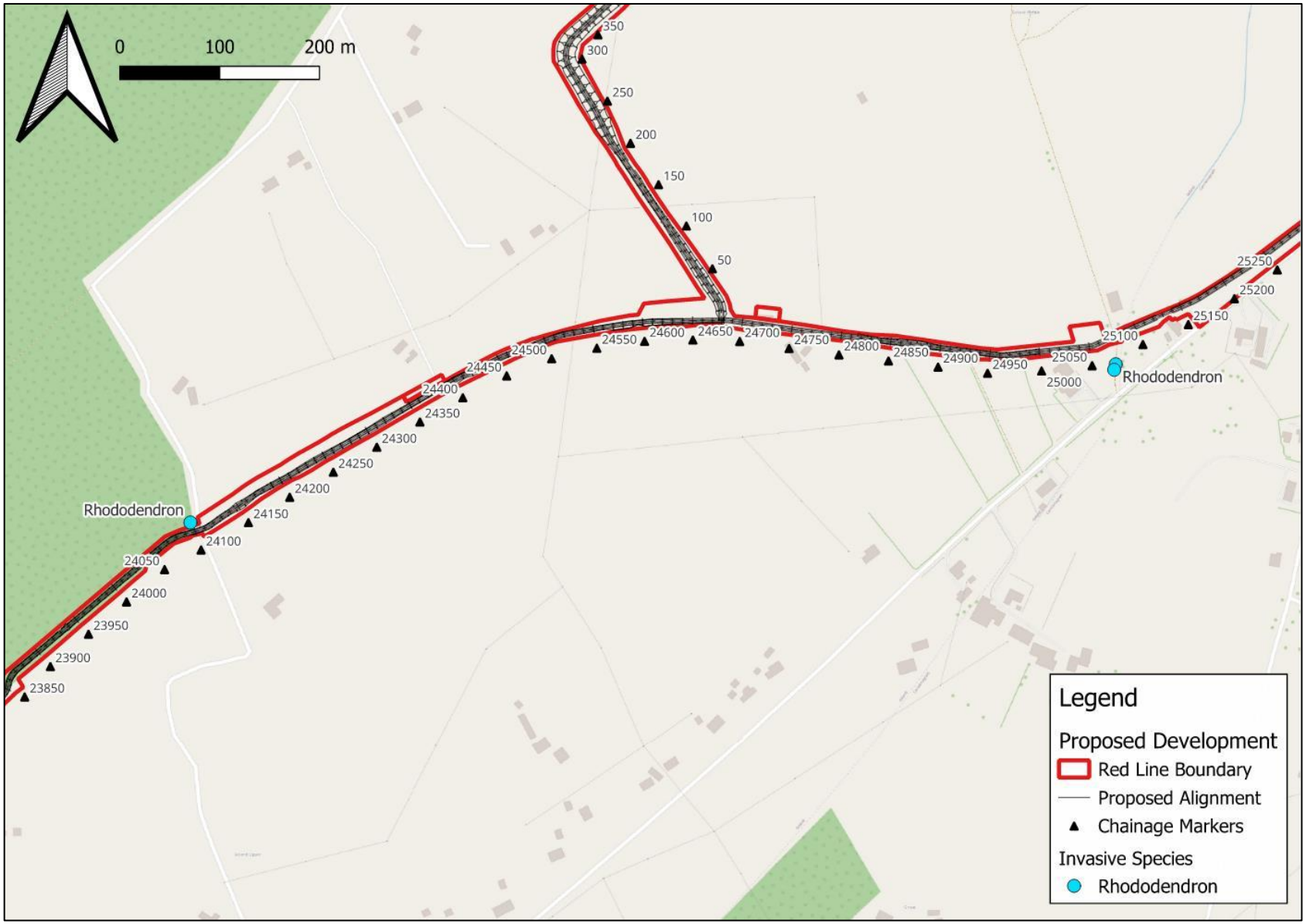
Proposed Alignment
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
Cherry Laurel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23900
23850
Rhododendron
Rhododendron
Legend
Proposed Development
Red Line Boundary
Proposed Alignment
Chainage Markers
Invasive Species
Rhododendron

0
100
200 m
1320
1305
1250
1200
1150
Japanese Knotweed
1100
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
Rhododendron
Rhododendron
Rhododendron
Rhododendron
Rhododendron
Rhododendron
Legend
Proposed Development
Red Line Boundary
Proposed Alignment
Chainage Markers
Invasive Species
Rhododendron

0
100
200 m
Himalayan Balsam
River Finn SAC
Himalayan Balsam
Himalayan Balsam
Himalayan Knotweed
Cherry Laurel
305
300
250
200
150
100
50
30096
30050
30000
29950
29900
29850
29800
29750
29700
29650
29600
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28950
28900
Legend
Proposed Development
Red Line Boundary
Proposed Alignment
Chainage Markers
Designated Sites
Special Areas of Conservation (SACs) (ROI)
Invasive Species
Himalayan Balsam
Invasive Species
Cherry Laurel
Himalayan Knotweed

APPENDIX B
ERAGINATE PROCESS

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Eraginate ® Treatment Process – Japanese Knotweed

The Japanese Knotweed (JKW) is excavated from the ground and transported to a designated treatment area where the rhizomes/root material is screened/handpicked and transported to a skip for disposal at a suitably licensed landfill facility. This process greatly reduces the volume of material being sent to landfill. The remaining soils can be re-used on site in a designated location and monitored for any signs of regrowth.

The general sequence of works would be as follows;

- The first operation will be to carry out a pre-treatment spraying operation of the JKW.
- Designated haul routes will then be agreed and marked out for the transport of the JKW impacted soils to the central treatment area.
- A quarantine/lay down and treatment area will be established on site. This will comprise a sufficiently large area to hold the excavated JKW impacted soils. A cleaning station will also be established at the entrance to the quarantine area so that any pedestrians entering or leaving the area can wash and scrub their footwear with herbicidal formulae to ensure that no JKW is spread throughout any other area of the site.
- All other vegetation surrounding the JKW will then be removed. This will be carried out by hand or riddle bucket. It will be done in such a fashion as not to cause any disruption to the JKW growth but rather expose the growth for eradication.
- The JKW stalk material will be removed and loaded into lined skips for disposal off site to a suitably licensed facility.
- A controlled excavation of the soils that are impacted with knotweed rhizomes will be carried out. A specialist supervisor will determine the extent of the excavation to ensure all rhizomes are removed. All excavated soils are stockpiled and handpicked to remove any visible roots, rhizomes or crowns.
- All excavated and handpicked material will be stockpiled in the treatment area for mechanical processing. An Allu bucket will be used to mechanically process the rhizome material from the soils. Any remaining rhizome fractions will be treated with herbicides.
- During treatment operations, all spray protocols are to be followed including handling requirements, operators PPE, environmental protection, spray drift and protection of other site operatives and visitors. Protection measures include; forming of an embankment of soils

Registered in Northern Ireland NI065395
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around where spraying takes place, spraying low to ground level and not spraying if it is a windy day.

- All plant is to remain in the quarantined area for the duration of the works. If any plant is to be removed, the wheels and tracks should be jet washed with approved herbicides prior to removal off site. This ensures that no JKW is spread to any other area of the site. Upon completion the treatment area will be de-mobilised and the site handed back to the client.

Example of Warranty and Warranty Conditions

ATG Services (Ireland) Ltd ("ATG") will design, carry out and complete such treatment of Japanese knotweed as ATG sees fit (subject to clause 5 below) to see that the eradication will be successful in the areas in which ATG will carry out treatment works and will monitor these areas as a watching brief service and as further described in ATG's appointment, provided that the programme of application as advised by ATG is adhered to ("the treatment"). In carrying out any services and the treatment, ATG Services (Ireland) Ltd shall not be construed as owing any greater duty than the use of reasonable skill and care in accordance with the normal standards of its profession.

1) If there is any evidence that the treatment has not been successful despite the above, ATG undertakes to take such reasonable further steps as shall be necessary, to eradicate the Japanese Knotweed.
2) If the client requires greater insurance cover than the above, it must in its own interests arrange such cover.
3) On completion of the treatment, ATG will write to the client and to the beneficiary confirming that the control has been successful in those areas, which have been previously identified and treated in accordance with ATG's method statement.
4) ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for the emergence of any Japanese Knotweed that has been introduced during the period of the treatment or the period of this warranty by the actions of a third party.
5) This warranty does not confer any rights other than expressly set out above and does not cover any claims for consequential loss or damage. ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for any special, indirect or consequential loss.

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6) If Japanese Knotweed regrows in the site area treated by ATG, then ATG undertakes to re-treat the site area using any reasonable methods, provided that the cause of the regrowth is not due to the actions of a third party.
7) ATG Services (Ireland) Ltd confirms that it has taken out professional indemnity insurance with a limit of indemnity of not less than £2,000,000 (two million pounds) for any one claim or series of claims arising from the same originating or underlying cause. ATG will maintain such insurance at all times until five years after the completion of the treatment provided such insurance is available in the United Kingdom on commercially reasonable rates and terms. When reasonably requested, ATG will provide documentary evidence that the insurance required under this warranty is being maintained.
8) During the period of the treatment certain factors could affect timing and effectiveness or eradication methodology. These include; force majeure; fire; lightning; explosion; flood; riot and civil commotion; manufacture or transportation of any of the goods or materials require for the treatment, or any persons engaged in the preparation of the design of the treatment; exceptionally adverse weather conditions; and any other man made factors whatsoever. ATG will take reasonable steps to modify its eradication methodology to mitigate the effects of the foregoing where these are identified by ATG.
9) ATG Services (Ireland) Ltd shall have no liability whether in contract or in tort, in negligence, for breach of statutory duty or otherwise for Japanese Knotweed brought to the site after the treatment has been completed, or present in an area outside of the original stands treated.
10) Subject to the terms set out above, this warranty shall remain valid for a period of five years from completion of the treatment.

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Warranty Conditions

The warranty is conditional on the following:

- Eradication is carried out 100% under ATG's control and to detailed ATG methodology.
- A detailed site survey to identify and map at a suitable scale consistent with the site to show all knotweed infestations, and any trees or shrubs of ecological value that should be protected from the eradication treatment works. Such survey to identify any potential watercourses or other factors that would affect methodology.
- Complete Health and Safety audit of site.
- Historical record of all ground works over the last twenty-four months.
- Agreement with client that the plan accurately reflects the extent of all knotweed on site, and agreement of course of action for any boundary issues with adjacent landowners. Plan to form basis of site control document. This to be used in conjunction with proposed site development plan.
- All proposed works on site during the eradication period to be notified to ATG prior to commencement. This to include all proposed site activity and any local authority and utility works. It is the sole responsibility of the client to keep ATG informed of any potential disturbance of the site in any way whatsoever.
- Site security to be the sole responsibility of the client and should be consistent with any recommendations made by ATG.
- All fly tipping subsequent to contract and GPS map being agreed with the client to be disposed of at discretion of ATG in approved manner at additional cost to client. Disposal to be organised at cost by ATG and to be charged as incurred.
- ATG to approve source and importation of any topsoil onto site and to agree any significant change in ground levels to be carried out post site treatment.
- If the performance of any part of the treatment is prevented, restricted or delayed by reason of any cause beyond the reasonable control of ATG (including (without limitation) fire, flood, rain, wind, sleet, hail and other Act of God, industrial action including strike and lock out, riots, war, armed conflict, trade sanctions, contamination, disease and epidemic, interruption or failure of a utility service, failure of computer or other machinery, and change in law or regulatory requirements) ATG shall be excused from such performance to the extent of such prevention, restriction or delay, provided that ATG shall use commercially reasonable

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Appendix H

Construction Traffic Management Plan

Barnesmore Gap Greenway

Appendix 4.1H: Construction Traffic Management Plan

Donegal County Council

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1. Overview

1.1 Introduction

This Construction Traffic Management Plan (CTMP) has been developed to outline the traffic management during the construction phase of the Barnesmore Gap Greenway project, and takes into consideration the construction phasing and techniques as noted primarily in Chapters 4 and 5 of the Environmental Impact Assessment Report (EIAR).

The CTMP considers the processes and temporary traffic management proposals to facilitate safe passage for vehicular traffic and non-motorised users, as well as the safety of the construction workforce. This CTMP will be further developed by the Contractor who shall be responsible for preparing detailed CTMPs including the planning, design, implementation, maintenance and removal of the final traffic safety and management measures required to facilitate the works. The Contractor shall consult with Donegal County Council, TII, and An Garda Síochána before the commencement of the construction phase.

1.2 Site Location

The proposed route of the greenway mainline extends between Donegal Town and Ballybofey/Stranorlar, incorporating Lough Eske, Barnesmore Gap and Lough Mourne. It is approximately 31km in length and will be a bi-directional shared walking, wheeling, and cycling route. There is a further 6.5km of links which provide additional connectivity and integration to surrounding amenities and active travel routes, which gives a total length of 37.5km for the proposed facility. Refer to General Arrangement Drawings (60701883-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-HG-0096-0125) in Volume 3 of the EIAR.

1.3 General Description of the Works

Construction of much of the development will take place away from public roads and at these locations impacts on traffic will largely be restricted to site access/egress points, which will be located where the greenway interacts with the local road network. However, there are more significant impacts in some locations, including at 3no national road underpasses, 1no road overbridge and at areas where works are being undertaken within the corridor of existing roads.

The works generally are to consist of the following main work items:

- *Site set-up, including all compound and lay-down areas;*
- *Site Clearance works;*
- *Demolition works;*
- *Fencing and boundary treatment works;*
- *Drainage works;*
- *Non-intrusive and intrusive Survey Investigation works;*
- *Earthworks;*
- *Pavement works;*
- *Kerbs, Footways & Paved Areas;*
- *Traffic Signs & Road Markings;*
- *Public Lighting and ducting;*
- *Landscaping;*
- *Accommodation Works;*

- *Utility Protection/Diversion;*
- *Structural works;*
- *All temporary works associated with the project, for example temporary traffic management, trench supports, etc.;*
- *Clean up site and demobilise.*

1.4 Traffic Management Principles

Traffic Management proposals shall be developed to ensure the safety of all road users, including vulnerable road users, and the workforce. Proposals shall be founded on the principles of prevention.

Traffic Management proposals shall be developed to minimise disruption for residents and passing traffic. Through traffic shall be maintained where possible, and therefore road closures shall be implemented only when necessary and for as short a duration as possible. Diversionary routes shall be clear and appropriate.

Traffic Management proposals must be in accordance with all relevant legislation and guidelines, including:

- Chapter 8 of the Traffic Signs Manual (TSM) Chapter 8;
- Temporary Traffic Management Design Guidance; and
- Temporary Traffic Management Operations Guidance

During the construction phase the Contractor shall be, or provide, a competent traffic management designer with specific expertise to carry out the traffic management designs for the project.

A dedicated, suitably qualified and experienced Traffic Management Coordinator will be appointed for the duration of the project. The Traffic Management Coordinator shall be competent in temporary traffic management for works on public roads, with appropriate training, qualifications and experience, and shall have sufficient authority to effectively plan, implement, monitor and adjust traffic management arrangements in accordance with relevant legislation, standards and the requirements of the Roads Authority. This person will be the main point of contact for all matters relating to traffic management on the project.

Pedestrian and non-motorised user (NMU) movements through the scheme shall be disrupted as little as possible with two-way movement being provided throughout the scheme. This can be done by introducing dedicated segregated NMU routes, where there is sufficient width and by installing diversions where required.

Signage shall be clear and well maintained.

Access and egress for all the Emergency Services must be provided and maintained at all times.

2. Construction Traffic

2.1 Access Locations

A number of compounds and temporary working areas have been identified to facilitate the construction of the works and provide access points for construction traffic. They are shown in Temporary Construction Areas and Compound Locations Drawing No. 60701883-ACM-HGN-SW_ZZ_ZZ_ZZ-DR-HG-0901 (Refer Volume 3 of EIAR).

3no main compounds will be situated at trailhead locations, with a number of satellite working areas situated at regular intervals along the development. Overall, there will be 22no working areas as well as multiple direct access points from the local road network. Works will be undertaken in each direction from the compounds, typically 500-2000m depending on the spacing of compounds in a given area.

Access to the works locations will be from the construction compound or a direct access point. The compounds will be accessed via public roads, or through private lands which will form part of the land take for the development.

Table 2-1 below indicates the location of the proposed compound and works areas.

Table 2-1 - Compound and Working Area Locations

Description	Location	Chainage (m)	Type	Access
Compound No. 1	Donegal Town	000	Main Compound	Via Tirchonnail Street
Working Area No. 1	N56	1120	Temporary Works Area and Access – N56 Underpass	Via L19952 - A section of haul road will be constructed linking the public road to the working area
Working Area No. 2	Clar	700 (Clar Spur)	Temporary Works Area – N15 Underpass	Via N15. No Right Turn permitted from the N15. Site traffic travelling southbound will use Drumlonagher Roundabout to turn.
Working Area No. 3	Clardrumnagahan	3500	Temporary Works Area	Via L65251 and L65351
Working Area No. 4	River Eske South	4200	Temporary Works Area and Access – River Eske Crossing	Via L65351 - A section of haul road will be constructed linking the public road to the working area
Working Area No. 5	River Eske North	100 (Lough Eske Loop)	Temporary Works Area and Access – River Eske Crossing	Via 19453 - A section of haul road (along the line of the proposed greenway) will be constructed linking the public road to the working area
Working Area No. 6	Lough Eske Demesne	650 (Lough Eske Loop)	Temporary Works Area	Via 19453, using the existing Coiltle access track.
Working Area No. 7	St Francis NS	6650	Temporary Works Area and Access – River Derg Crossing	Via L19752 - A section of haul road will be constructed linking the public road to the working area
Working Area No. 8	N15 North	8150	Temporary Works Area and Access – N15 Underpass	Via N15. No Right Turn permitted from the N15. Site traffic travelling southbound will use L2595 to approach from south side. Works entrance to include deceleration lane in hard shoulder
Working Area No. 9	N15 South	8350	Temporary Works Area and Access – N15 Underpass	Via N15. Works entrance to include deceleration lane in hard shoulder
Working Area No.10	N15 South	8800	Temporary Works Area and Access	Via L2595 existing field access)
Working Area No. 11	Coillte land east of Keadew Lower	10550	Temporary Works Area	Via L2595-3 and Coillte track.
Compound No. 2	Biddy's	12150	Main Compound	Via N15 and new access constructed from L26051
Working Area No. 12	Meenbog Wind Farm Access	16200	Temporary Works Area	Via N15 and existing construction access
Working Area No. 13	Derg Line	17300	Temporary Works Area	Via N15 and L65541 (new access)
Working Area No. 14	Coillte land near Goland	23550	Temporary Works Area	Via L65341 and existing Coillte track
Working Area No. 15	Carrickmagrath	25450	Temporary Works Area	Via L30441 (existing field access)
Working Area No. 16	Coppering Heights	26400	Temporary Works Area	Via L30441 (existing field access)

Description	Location	Chainage (m)	Type	Access
Working Area No. 17	Sessiaghnoneill	27250	Temporary Works Area and Access – Sessiagh View Crossing	Via L28142 (new access)
Working Area No. 18	Sessiaghnoneill	27300	Temporary Works Area and Access – Sessiagh View Crossing	Via L28241 (new access)
Working Area No. 19	Sessiaghnoneill School	27530	Temporary Works Area	Via L28142
Working Area No. 20	River Finn South	29350	Temporary Works Area – River Finn crossing	Via Navenny Street
Working Area No. 21	River Finn North	29550	Temporary Works Area – River Finn crossing	Via Main Street and existing access lane
Working Area No. 22	River Finn North	29550	Temporary Works Area – River Finn crossing	Via Railway Road. A section of haul road (along the line of the proposed greenway) will be constructed linking the public road to the working area
Compound No. 3	Stranorlar	30100	Main Compound	Via Railway Road

There are also several locations where the proposed greenway interacts with the public road network where it can be accessed by construction traffic. These are outlined in Table 2-2 below.

Table 2-2 - Public Road Access Points

Location / Description	Chainage (m)
Railway Road	580
Mill Lane L19951	870
Local Road L19952	1800
Local Road L65251	3230
Local Road L65251	460 (Clar Link)
Local Road L65351	3350
Local Road L19453	540 (Eske Loop West)
Local Road L19453	620 (Eske Loop East)
Local Road L19453	6100
St Francis National School L19752	6700
Local Road L25951	10240
Local Road Woodland	24080
Local Road L65441 Goland	960 (Goland Link)
The Beeches	28950
Navenny Street L30443	29300

2.2 Workforce Parking

On-site parking will be provided for the construction workforce at the main compounds and working areas. Any vehicles associated with the works will not be permitted to park, idle or queue on the public road network.

2.3 Schedule of Construction Traffic Arrivals

Working hours are outlined in the CEMP. The majority of LGV traffic generated by the construction will arrive at the start of the working day and leave at the end of the working day, and the impacts have been assessed as part of Chapter 5 of the EIAR.

The anticipated number of HGV journeys have been estimated against pavement, earthworks and drainage activities, and the peak volume of HGV movements identified. HGV traffic for the import of material will arrive at various intervals throughout the day within the working hours, but deliveries will be scheduled so as not to coincide with the peak periods on the local road network. These impacts have also been assessed as part of Chapter 5 of the EIAR.

2.4 Haul Routes

The Contractor's CTMP will clearly identify those roads that will be used to access this project and those roads that are not to be used, in consultation with Donegal County Council and An Garda Síochána. In some cases, An Garda Síochána and the roads authority may direct that certain roads cannot be used for laden HGV's but can be used for LGV's or unladen HGV's.

A pre-condition survey will be carried out on all public roads that will be used in connection with the works to record the condition of the road before the works commence. A post construction survey will also be carried out after the works are completed.

Upon completion of the construction works all roads will be reinstated to their pre-works condition or better and to the satisfaction of Donegal County Council. If during the construction works, some of the roads used in connection with the development are damaged then these roads will be made good to the satisfaction of Donegal County Council.

2.5 Site Inductions

All workers will receive a comprehensive site induction which will include, as appropriate, a section on traffic management and clear guidance on the routes to be used/not used.

3. Existing Infrastructure

This section outlines the baseline environment for walking, cycling, bus services and general traffic along the proposed development.

3.1.1 Pedestrian and Cycling Infrastructure

3.1.1.1 Cycling Infrastructure

There is no existing segregated cycle infrastructure between Donegal Town and Ballybofey/Stranorlar. There is one existing on-road cycle trail, the North West Trail, which utilises a mixture of local roads and the N15. It interacts with the proposed development in a number of locations and impacts during construction are outlined in Table 3-1.

3.1.1.2 Pedestrian Infrastructure

There are trails in the study area which are predominantly walking and hiking routes, most notably The Bluestack Way and the International Appalachian Trail, and these interact with the proposed development in a number of locations.

There are also sections of online urban footways in Donegal Town and Ballybofey/Stranorlar which interact with the proposed development, along Tirchonnail Street and Railway Road in Donegal Town and Railway Road, Millbrae and Navenny Street in Ballybofey/Stranorlar.

Impacts during construction are outlined in Table 3-1.

Table 3-1 - Construction Impacts on Pedestrian/Cycling Infrastructure

Route/Road	Chainage	Construction Works	Type of TTM	Duration of TTM
NW Cycling Trail – Tirchonnail Street	0	Upgrade of footpath adjacent to trailhead Installation of raised crossing	Lane narrowing – Access maintained Short term road closure (cyclist access maintained)	< 2 months 1-2 days
Bluestack Way - Mill Lane	870	Greenway crossing – signage and road markings	Local Access Maintained	<1 day
Appalachian Trail – L65251	3240 460 Clar Link	Greenway crossing – signage and road markings	Two way lights/Stop-Go boards – Access Maintained	<1 day
NW Cycling Trail – L19453	540 Eske Loop	Greenway crossing – signage and road markings	Two way lights/Stop-Go boards – Access Maintained	<1 day
Bluestack Way / Appalachian Trail (Lough Eske Demesne)	670 - 1080 Eske Loop	Upgrade of existing path	Full Closure – diversion for pedestrians along L19453 (c.1km)	< 2 months
NW Cycling Trail – L19453	1350 Eske Loop	Realignment of L19453	Lane closures & two way lights (Access maintained). Some short term full closures required – diversion for cyclists along L-6525-1, L-6535-1 and N15 (3.6km).	< 2 months <1 week
NW Cycling Trail – L19453	1650 - 1700 Eske Loop	Active travel section added to existing road bridge	Full closures required – diversion for cyclists along L-6525-1, L-6535-1 and N15 (3.6km).	< 2 weeks
NW Cycling Trail – L19453	6120	Greenway crossing – signage and road markings	Two way lights/ Stop-Go boards – Access Maintained	<1 day
NW Cycling Trail – L19752	6720	Greenway crossing – signage and road markings	Two way lights/ Stop-Go boards – Access Maintained	<1 day
NW Cycling Trail – Navenny Street	29300	Active travel section and greenway crossing Installation of raised crossing	Lane closures & two way lights (Access maintained). Short term road closure (cyclist access maintained)	<2 weeks 1-2 days
NW Cycling Trail – Millbrae	30300 - 30400	Active travel section, narrowing of road cross section	Lane closures & two way lights (Access maintained). Short term road closure (cyclist access maintained)	<4 weeks 1-2 days

3.1.2 Bus Infrastructure

There is no bus infrastructure immediately adjacent to the Proposed Development. Consultation will be undertaken with bus service providers in advance of the design and implementation of temporary traffic management plans to ensure bus services are not adversely impacted.

3.1.3 Road and Traffic

The predominant National Road located within the study area is the N15 that links Lifford (Derry, Strabane and Letterkenny) to Sligo. Within the study area, the N15 extends from the southern side of Donegal Bay towards Donegal Town, before traversing the study area in a north-easterly direction to Ballybofey/Stranorlar. The study area also includes the N56 national road at the southern end providing a bypass of Donegal Town which extends in a westerly direction to Mountcharles and onward around the coastline of County Donegal. The N13 is also located within the study area for a short stretch, travelling in a northerly direction out of Stranorlar towards Letterkenny.

The following Regional Roads are located within the study area, notable only within the vicinity of Donegal Town and Ballybofey/Stranorlar.

- R267: Located within the southern extent of the study area, which is the old N15 main road passing though the centre of Donegal Town tying into the N15 at the southern end and the N15/N56 roundabout junction at the north-eastern end at Drumlonagher.
- R925: Linking from the R267 at The Diamond in the centre of Donegal Town to the N56 at the western end of the Donegal Bypass.

There are also a number of local road throughout the study area, some of which interact with the proposed development, outlined in Table 2-2.

Traffic surveys were undertaken as part of the Traffic and Transport Assessment at locations including the N15, urban areas and rural local roads; The traffic volumes are summarised in Table 3-2.

Table 3-2 - Traffic Volumes

Location Description	AADT
Donegal Town Trailhead	817
Stranorlar Trailhead	16,560
Lough Eske Trailhead	425
N15, Lough Mourne (TII Static Counter)	8,532

4. Overview of Traffic Management Measures

4.1 Roadworks Types

The nature of the works means the roadworks of type Static Type A, Static Type B and Static Type C operations (as defined by TSM Chapter 8) are required throughout the duration of the works. The underpasses, overbridge and online works will be carried out with Static Type A being implemented. These works will remain in operation in all traffic flow conditions and typically for a period in excess of 12 hours. There will be minor construction works, such as signage and road marking, carried out under localised temporary traffic management or areas of works that require smaller durations, these works will be carried out under a Static Type B and Static Type C operations.

4.1.1 Static Type A

These are full time works that remain in operation in all traffic flow conditions and typically for a period in excess of 12 hours. They may remain in place for extended time periods of weeks to months.

Examples are major roadworks such as realignment, widening, overlay, utility installation or upgrade or drainage installation. Type A works will usually require the Temporary Traffic Management (TTM) Designer to formulate a site specific TTM layout but may include works with a standard layout.

These layouts will be implemented using hoarding / fencing which will segregate the public from the works area as they are in place for extended periods. The Contractor is to identify the working areas required for each layout to assist with preparing the TTM carriageway cross-sections.

4.1.2 Static Type B

These are works of less than 12 hours with one or two vehicles in the operation and may include maintenance and repair operations. They may require development of specific TTM layouts or use a standard TTM layouts or combination of both.

These layouts will be short term so will be demarcated using cones and safety zones. As these layouts will be shorter term but may have a bigger impact on the running traffic the Contractor will be required to minimise any disruptions to the running carriageways.

4.1.3 Type C Operations

These are roadworks at discrete locations with a planned duration of up to 15 minutes excluding signage setup. Traffic flow is unrestricted by either traffic volume or weather conditions. Roadworks such as washing signs, checking utilities and one-off road repairs generally fall within the scope of Type C works. They normally include a maximum of two road workers, one works vehicle and a minimal amount of plant. Emphasis of controls is built around advanced visibility from the road user to the works and stopping sight distance. Both of these increase significantly within Type C Roadworks as traffic speeds increase, in line with TII Publications. Signs mounted on the works vehicle may be sufficient provided the visibility and stopping sight distances comply with the requirements specified. Where signs are not mounted on vehicles, a WK 001 Roadworks Ahead sign must be erected on each approach side to the works.

- These works must be individually separate, distinct and detached from other works. They are a single one-off piece of work at any given location;
- Traffic flow must be within the carriageway capacity;
- There must be good visibility; and
- The works shall not introduce an additional hazard at the location over and above that associated with normal road usage.

A TTM Designer will not normally be required to draw up individual plans for Type C works but may be required to produce a suite of standard TTM layouts for typical Type C operations. For detailed guidance of Type C works refer to the Temporary Traffic Management Operations Guidance Document.

The criteria for these layouts will be similar to that of Static Type B.

4.2 Road Closures and Diversions

Roads will only be permitted to be closed where necessary to facilitate the safe construction of the works, in agreement with Donegal Council (and TII, where required). The contractor should allow at least 6 weeks for the Roads Authority to approve an application for a Temporary Closing of Roads Order.

The following shall be taken into account when planning a road closure with a diversion:

- Suitability of the diversionary route with respect to expected traffic type, flow, etc;
- Suitability of the diversionary route with respect to capacity, width and surface condition;
- Ensuring that the location of access for works vehicles do not adversely affect the diversion route (e.g., by introducing right turn movements);
- Establishing contractual responsibility relating to the signing of the diversion routes;
- Advanced signing detailing the nature, duration and necessity for the works and requirements for detailed directional signing throughout the diversion (per Chapter 8);
- Priority junctions (existing priorities may need to be altered to maintain diverted traffic flow);
- Introducing one-way traffic flow and prohibiting turning movements;
- Changing priority and restricting movements according to vehicle size/weight;
- Presence of narrow bridges or other restrictions on the diversionary route;
- Other works and /or winter maintenance on the diversion route;
- Effect on the environment and safety; and
- Requirements for vulnerable road users.

Section 75 of the Roads Act 1993/ Article12 of the Road Regulations 1994/ DOE Guidance Notes (June 1994) require the following when undertaking a road closure;

- Two public notices required – one at least 14 days before proposed closure (Intention), one at
- least 7 days before closure (Decision). The Gardaí must also receive the above notices in writing.
- Chief Executive's Orders are required for both Intention and Decision.
- Notice of Intention must invite objections, which must be considered prior to a final decision being made.
- The maximum period for a temporary closure is 12 months. This can be extended by the making of a further order.
- Both the Notice of Intention and Notice of Decision must state:
    - The road to be closed
    - The period of the closure
    - The reason for the closure
    - The alternative route(s) available

- DOE Guidance Notes on Road Closures (June 1994) recommends that particular attention be given to notifying local people in advance.
- Section 75(2)(a) of the Act deals with authorising persons to use a public road while a Temporary Road Closure is in effect.

If the effect of the proposed road closure on road users, local residents or businesses is likely to be significant, an information campaign shall be undertaken in advance of the works. This may include advertising in local press, leaflet drops and mobile variable messaging signs.

4.3 Lane Closures and Shuttle Systems

Wherever possible, the Contractor shall ensure that two-way traffic is maintained throughout the works in a safe manner. Where this is not possible, then alternative arrangements for the control and management of traffic must be submitted for approval to Donegal County Council.

The Contractor may use Stop and Go discs or temporary signal controlled single lane shuttle working to facilitate the works (if necessary) provided the required consents and detailed TTMP approvals have been received from Donegal County Council, An Garda Síochána and the emergency services.

It is anticipated that static lane closures will be required. These are appropriate for works that are confined to a fixed location. The appropriate level of signage and temporary traffic measures required shall be as detailed in the Traffic Management Guidelines and in accordance with the traffic speed limit pertaining to the works area. The Contractor shall consult with Donegal County Council and An Garda Síochána prior to implementing traffic control measures on site.

A shuttle system of traffic control may be operated by two methods:

4.3.1 Stop & Go

Manually operated ‘Stop and Go’ discs allow traffic flows to move according to the demand. This operation must be undertaken by trained personnel, wearing high visibility garments. Signing and coning for the Stop and Go method shall be in accordance with the ‘Traffic Signs Manual (Chapter 8 – Temporary Traffic Measures and Signs for Roadworks)’ and the ‘Guidance for the Control and Management of Traffic at Roadwork Manual.’

4.3.2 Temporary Traffic Signals

Temporary traffic signals can be vehicle actuated or manually operated. Temporary traffic signals must be positioned with adequate forward visibility, and where possible, have inter-visibility. The design and the operation of temporary traffic signals shall be undertaken by competent personnel.

5. Traffic Management Proposals

Construction of much of the development will take place away from public roads and therefore impacts on traffic will largely be restricted to site access/egress points, which will be located where the greenway interacts with the local road network. However, there are more significant impacts in some locations, as outlined below:

5.1 Underpass Construction

The proposed development has 3no national road underpasses, to provide grade separated crossings and remove vehicle conflicts with greenway users. These will be constructed using a 'cut and cover' method and require closures of the road, proposed to be undertaken over 1-2 weekends at each location.

5.1.1 N56 Underpass

The construction of the proposed underpass under the N56 (Ch. 1080) will require a full closure of the N56 national road in order to excavate the existing road, install the foundations and precast box culvert units and reinstate the pavement surface. The roadworks will be of Static Type A, with Level 2 design parameters.

Given the strategic nature of the N56, this closure will only be permitted at the weekend (not including bank holiday weekends). The closure will be undertaken over a full weekend (Friday night to Monday morning) with 24 hour working in place to minimise the length of the closure.

The diversion route will be through Donegal Town, using the R267 and R925 between Drumlonagher Roundabout and Doonan Roundabout.

5.1.2 N15 Underpass – Clar

The construction of the proposed underpass under the N15 (Clar Link Ch. 820) will require a full closure of the N15 national road in order to excavate the existing road, install the foundations and precast box culvert units and reinstate the pavement surface. The roadworks will be of Static Type A, with Level 2 design parameters.

Given the strategic nature of the N15, this closure will only be permitted at the weekend (not including bank holiday weekends). The closure will be undertaken over a full weekend (Friday night to Monday morning) with 24 hour working in place to minimise the length of the closure.

The diversion route will be north of the N15 using the L65251 and L65351.

5.1.3 N15 Underpass – Mullanalamphry

The construction of the proposed underpass under the N15 (Ch. 8250) will require a full closure of the N15 national road in order to excavate the existing road, install the foundations and precast box culvert units and reinstate the pavement surface. The roadworks will be of Static Type A, with Level 2 design parameters.

Given the strategic nature of the N15, this closure will only be permitted at the weekend (not including bank holiday weekends). The closure will be undertaken over a full weekend (Friday night to Monday morning) with 24 hour working in place to minimise the length of the closure.

The diversion route will be south of the N15 using the L25951.

5.2 Overbridge Construction

The proposed overbridge at Sessiaghoneill will require a new deck to be lifted over the existing road and placed on new abutments either of the road. A road closure will be required for the deck lift, expected to last for <12 hours (Static Type B, with Level 1 design parameters).

The diversion route for the road closure will use local roads L28241, 28441, 28642 and L30442.

Lane closures will also be required for the construction of the abutments. These are expected to last for 1-2 weeks and will be of Static Type A, with Level 1 design parameters. A shuttle system will be in operation with temporary traffic signals.

5.3 Road Realignments

Two local roads will be realigned as part of the works; Railway Road in Donegal Town and the local road L19453 south of Lough Eske.

5.3.1 Railway Road, Donegal Town

Railway Road is being realigned to the north to construct the Donegal Town trailhead. While the majority of works can be undertaken offline, a road closure (1-2 weeks) will be required to construct the tie in and the roadworks will be of Static Type A, with Level 1 design parameters. During the closure, local vehicular access to Railway Park will be retained as far as possible. When access cannot be provided, alternative access must be provided through Mill Race Crescent. Close liaison with Donegal Mart will be undertaken to ensure access is maintained when required.

There is an existing footway along the northern side of Railway Road, which will be retained as far as possible. When it must be removed to facilitate the tie on in of the new alignment, alternative, segregated pedestrian access must be provided through the works.

5.3.2 L19543 Lough Eske

The L19453 will undergo a minor realignment to the south to facilitate the proposed greenway. The majority of the works, which include earthworks, drainage and pavement, can be undertaken using a partial (lane) closure and temporary traffic signals (Static Type A, Level 1).

A road closure will also be required for less than one week to facilitate surfacing. The diversion route will utilise the N15 and L65251.

Close liaison will be undertaken with local residents, Lough Eske Castle Hotel and Christ Church to ensure access is maintained where required.

5.4 Construction of On Road Facilities

There are 5no locations where the greenway will be constructed as part of the existing road corridor, either as a segregated shared use active travel facility or unsegregated quiet road. These will require lane closures and in some instances, road closures.

5.4.1 Tirchonaill Street

As part of the construction of the proposed trailhead in Donegal Town, the existing footway on the east side of Tirchonaill Street will be upgraded to a 3m wide active travel shared surface, along with public realm and landscaping works. Lane narrowing will be implemented in order to complete the majority of the works with two way traffic maintained. In order to install the raised table zebra crossing, a short term road closure will be implemented. Diversions will be via the R925.

5.4.2 L19543 Lough Eske Bridge

Lough Eske bridge will be retrofitted to include a designated shared active travel section as part of the proposed greenway, including an upstand kerb and new surfacing. In order to undertake the works, a road closure will be required. This will be undertaken at the same time

as the L19543 realignment and utilise the same closure. The diversion route will utilise the N15 and L65251.

5.4.3 Navenny Street, Ballybofey

The proposed greenway crosses Navenny Street and requires a short section (30m) of online active travel shared surface. Lane narrowing will be implemented in order to complete the majority of the works with two way traffic maintained. In order to install the raised table zebra crossing, a short term road closure will be implemented. The diversion route will be to the south utilising the L28642 and L29642.

5.4.4 Railway Road and Millbrae, Stranorlar

The proposed greenway runs along Railway Road and Millbrae as an online active travel shared facility. A combination of lane narrowing and lane closures will be required to undertake the majority of the works, with temporary traffic signals utilised where necessary. A road closure will be necessary for the proposed crossing points. Railway Road and Millbrae shall not be closed at the same time to facilitate diversion routes through Stranorlar.

5.4.5 L65441 Goland

A section of the proposed greenway utilises the existing local road L65441. Works at this location will be limited to signage and road markings, undertaken using short term Level 2 Type C operations.

5.5 Haulage Crossings and Construction Access

As outlined in Section 2.1, the greenway interacts with the local road network in a number of locations. These will act as access points for construction traffic and in some case construction traffic may be required to cross the local road in order to travel along the greenway. At these locations, the public road shall retain priority and construction traffic shall give way. Appropriate signage shall be erected in accordance with TSM Chapter 8 to warn traffic of site accesses (WK 052).

Wheel washers / judder bars will be placed at all site access points to minimise the migration of detritus onto the public roads. The roads will be inspected and cleaned on a regular basis

6. Other Requirements

6.1 Oversized Vehicles

An Application for an Abnormal Load Permit will be made to Donegal County Council in advance of any abnormal loads exceeding the thresholds laid out in the Road Traffic (Construction and Use of Vehicles) Regulations 2003. Where possible, abnormal load movements will be restricted to evening or night time to minimise disruption to local traffic and traffic on strategic routes.

Minimum lane widths shall be in accordance with Traffic Signs Manual Chapter 8.

6.2 Bus Priority

There is no requirement for Bus Priority through the works.

6.3 Emergency Services

Emergency services shall be consulted in accordance with Section 6.6 to ensure there is no adverse impacts to emergency service vehicles during the works.

6.4 Cyclists

The Contractor is to safely manage cyclist movements throughout the works in its temporary traffic management. Existing routes shall be maintained or diverted where required as outlined in Section 3.1.1. The Contractor shall not remove any existing routes without providing suitable alternatives.

6.5 Vulnerable Users

The Contractor is to safely manage the needs of any vulnerable users throughout the works in its temporary traffic management. Existing routes shall be maintained or diverted where required as outlined in Section 3.1.1. The Contractor shall not remove any existing routes without providing suitable alternatives.

The Contractor shall retain existing routes where possible and provide appropriate segregation from the works, in the form of hoarding/ fencing. All routes shall have appropriate gradients and allow for continued travel throughout – dropped kerbs and tactile paving.

6.6 Liaison

The Contractor shall liaise with the following parties.

- Donegal County Council
- An Garda Síochána
- Emergency services (Fire Brigade, Ambulance Service)
- Local businesses
- Local schools
- Local bus operators

- Local residents
- TII

Close liaison will be required with all of the above, in particular An Garda Síochána and DCC throughout the duration of the works. They shall be consulted during the development of the CTMP and in advance of new or amended traffic management proposals. Impacts to local residents and businesses in particular shall be taken into account during the development of the traffic management proposals.

6.7 Incident Management

The incident management system shall be a part of the temporary traffic management plan, which is a major element of the overall project safety plan. The incident management system shall include:

- An operational structure with a formal reporting system and review meetings;
- The name of the person with responsibility for record keeping;
- An outline contingency plan;
- During the works, consideration shall be given to the possibility of altering or removing the traffic management measures in order to deal with exceptional circumstances such as high traffic volumes;
- Adverse weather conditions;
- Emergency access; and
- Periods when the work is not in progress.

A 24-hour emergency phone number will be maintained for the duration of the construction works and the number will be noted on temporary signage at each site compound.

6.8 Use of Temporary Surface

The public may be required to traverse temporary surfaces; Live traffic may need to travel on construction layers, where the skid resistant property of the temporary surfaces may not match those of surface courses. Where areas of the carriageway that are not normally used to convey traffic are brought into operation the adequacy of such temporary surfaces shall be also considered with respect to the following:

- Cross fall/road camber;
- Location of gullies, channels, manhole covers and other ironwork;
- Clearances where traffic runs on edge strengthening or hard shoulder (e.g. proximity to safety barrier, light standards etc.);
- Surface condition (e.g., need to sweep the surface, skid resistance, planed out sections, etc.) and
- Impact of expected temporary traffic loads (e.g., hard shoulders may need strengthening, manhole covers may need to be upgraded, protection measures for utilities etc.).