Fermoy Weir Remediation and Fish Bypass Channel

Preliminary Construction Stage Environmental Management Plan

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T.J. O'CONNOR & ASSOCIATES
CIVIL & STRUCTURAL CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
PH: 01 2952321, FAX: 01 2954541, EMAIL: tjoc@tjoc.ie, WEB: www.tjoc.ie

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1. INTRODUCTION

1.1. Background

Fermoy weir was constructed in the early 19th century, almost 220 years ago, but has fallen into disrepair with the rate of deterioration accelerating in recent years. Fermoy weir is a protected structure, designated as such under the Fermoy Town Development Plan.

Cork County Council is obliged to protect the weir against further deterioration. Despite the presence of a fish ladder in the weir, the weir acts as a barrier to the passage of some fish.

In recent years its' condition has deteriorated leading to a significant breach in the weir. This breach has impacted on sporting and leisure activities on the river, has given rise to bed erosion which at one stage posed a risk to the flood defences protecting the town from flooding and has impacted the migration of fish upstream of the weir.

Cork County Council propose to remediate the weir in Fermoy in compliance with its obligations as the owner of a protected structure. In order to ensure that the weir remediation does not act as a barrier to fish migration, Cork Co Co propose to construct a fish bypass channel in tandem with the weir remediation works.

1.2. Environmental Setting

The proposed project comprises the remediation of the existing weir, including reconstruction of breached sections of the weir, and the construction of a rough channel pool bypass to provide for fish passage around the weir as detailed on drawings included with the planning submission.

The weir remediation works can be divided into two different elements which comprise the remediation of the upstream section of the weir, including the existing fish ladder incorporated in the weir, and the downstream section of the weir. The weir is categorised as a rubble embankment (or Crump) type weir upstream of the bridge and extending for a distance of 37m east of Fermoy bridge. The remaining section of the weir, extending eastwards, is a gravity wall type weir (referred to as the Mill Race weir wall section). It is this section that has been breached.

The locations of the different sections of the weir are indicated on Drawing No. 19011-TJOC-PL-XX-DR-C-0058. A section of the gravity wall type weir has collapsed resulting in a breach in the weir.

Cross-section details of the existing weir, as well as proposed remedial works to each of these sections, are shown on drawings 19011-TJOC-PL-XX-DR-C-0059 and 19011-TJOC-PL-XX-DR-C-0060 and are described below. Proposed remedial details to the existing fish pass are included on Drawing No. 19011-TJOC-PL-XX-DR-C-0081.

1.2.1. Weir Remediation – Embankment Section

The remediation of the embankment (crump) section of the weir will involve the removal of the existing concrete apron and resetting of the limestone setts with the addition of random rubble fill (similar to the existing) where required. A high tensile geotextile will be incorporated to assist in reducing wash out of the fill in the embankment. At both the upstream heel and downstream toe of the crump weir section, the undercut / missing stonework will be reset on concrete heel and toe footings along with the addition of rock armour on both the upstream and downstream sides to prevent undercurrents undermining the embankment, in particular on the downstream section in the future.

1.2.2. Weir Remediation – Mill Race Weir Wall

The remediation of the Mill Race section of the weir, east of the Bridge, will involve reconstructing the breached sections with existing or new stonework to closely resemble the existing masonry. Given the nature of this section of the weir, it is proposed to inject natural cement (also referred to as Prompt) into the fill sections and place mass concrete in the core of the new section of the weir. The stonework facing will then be pointed in natural cement and the downstream face of the weir protected by adding rock armour. The capping of the Mill Race wall will be removed, the wall raised and the capping reset to a remediated level with a level of 21.55mOD.

1.2.3. Proposed Fish Bypass

The proposed bypass consists of constructing a curved rock (rough channel pool) ramp type of bypass in the northern bank of the river Blackwater, west of Fermoy bridge. The rock ramp will provide a ladder for fish migrating upstream and resting pools would be created by the varying levels of rock weir walls.

The Bypass Channel will have sheet piled masonry faced side walls. The bed of the channel will comprise a gravel bed on rockfill. Armourstone pitched vertically will create the intermediate pools (12 No in total) and steps in the bypass channel.

A drawing of the proposed fish bypass channel is presented on Drawing No. 19011-TJOC-PL-XX-DR-C-0053.

2. CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

2.1. General

The purpose of the Preliminary Construction Environmental Management Plan (PCEMP) is to provide a framework to ensure that the Project's environmental impacts and risks identified during the Environmental Impact Assessment and Appropriate Assessment processes for these Works are effectively managed during construction, commissioning and handover of the project, and that appropriate mitigation, monitoring, inspection and reporting mechanisms are implemented.

This PCEMP sets out general project wide guiding principles and measures, as well as roles and responsibilities, in respect of mitigation, monitoring, inspection, auditing and corrective and preventative actions to be implemented on the project.

2.2. Contractor's Construction Stage CEMP

A detailed Construction Stage Environmental Management Plan (CSEMP) will be prepared by the appointed Contractor. which shall be a specific, targeted, and 'stand-alone' plan to ensure that all of the mitigation measures, obligations, requirements and constraints identified in the Environmental Impact Assessment and Appropriate Assessment for these Emergency Remedial Works are fully implemented for the works in accordance with the Project Approval. The CSEMP shall cross-reference the mitigation measures set out in this PCEMP.

2.3. Contents of PCEMP

- Section 1: Introduction
- Section 2: Construction Environmental Management Plan
- Section 3: Overall CEMP Management Framework
- Section 4: Mitigation Measures
- Section 5: Supplementary/ Supporting Documents
- Appendix A: Preliminary Environmental Management Forms
- Appendix B: Preliminary Environmental Monitoring Plan
- Appendix C: Preliminary Environmental Incident Response Plan
- Appendix D: Contractor's Traffic Management Plan
- Appendix E: Preliminary Waste Management Plan
- Appendix F: PCEMP Contact List

2.4. Contents of CSEMP

The CSEMP shall include, as a minimum, the following:

- Management Structure for Construction Phases
- Resources – roles and responsibilities
- Training
- Construction Activities and Sequencing
- Communications
- Management of Sub Contractors
- Monitoring
- Inspections and Auditing
- Reporting
- Corrective and Preventative Action Procedures
- Procedures for Review and Improvement
- Records

The Contractor's CSEMP shall, as appropriate, also include the following sub plans:

- Planning Compliance Plan
- Construction Compound Management Plan
- Traffic Management Plan
- Noise Management Plan
- Vibration Management Plan
- Water Quality Management Plan
- Waste Management Plan
- Invasive Species Management Plan
- Emergency Incident Response Plan
- Biosecurity Management Plan

2.5. Review and Updating of CSEMP

The CSEMP will be a "live" document which will be revised regularly. It is expected that amendments to the CSEMP will be necessary to reflect changes in project scope, contract scheduling, contractor appointments, environmental management practices or regulations, and developments on the site. These reviews are necessary to ensure that environmental performance is subject to continual improvement.

3. OVERALL CEMP MANAGEMENT FRAMEWORK

3.1. Roles and Responsibilities

3.1.1. Employer

Cork County Council is the Employer and will ensure that competent parties are appointed to undertake the works and that sufficient resources are made available at all stages of the project for the appropriate management of risks to the environment.

3.1.2. Employers Representative

Cork County Council and/or the Employers Representative (ER) is responsible for monitoring compliance with the CEMP. The Employers Representative will appoint temporary or permanent Specialists as required.

3.1.3. The Contractor

The Contractor appointed to carry out works under the project shall have responsibility for the organisation, direction and execution of environmental related activities in accordance with project environmental requirements including planning consents and other regulatory and contractual requirements.

3.1.4. Contractor's Environmental Manager

An Environmental Manager will be appointed by the Contractor to ensure that the approved CSEMP is implemented. The Environmental Manager will be a suitably qualified and experienced professional to perform the necessary tasks and should be appointed at a level of seniority that he/ she can interact effectively with the construction team. The Environmental Manager will be responsible for:

- Preparing, maintaining and ensuring implementation of the CSEMP;
- Establishing, implementing, and maintaining the Environmental Management System in line with ISO14001;
- Conducting regular environmental inspections and audits and checking adherence to the mitigation measures of the CSEMP;
- Helping to ensure that works are constructed in accordance with the relevant environmental commitments and requirements and that such compliance is adequately recorded and documented;
- Compiling a weekly environmental compliance report;
- Attending site meetings with the Contractor, the engineer and the invitees and presenting the findings of the audits;

- The Environmental Manager will facilitate regular meetings and site walk overs with the ER;
- Keeping up-to-date with relevant environmental best practice and legislative changes;
- Liaising with the Construction Manager in preparing site-specific Method Statements for all Works activities where there is a risk of environmental damage;
- Being familiar with the contents, environmental commitments and requirements contained in the original EIS and Appropriate Assessment;
- Ensuring all personnel have adequate environmental training;
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are reported.

3.1.5. Environmental Specialists engaged by the Employer

Environmental Specialists will be engaged by the Employer or the ER to provide advice and monitoring and reporting in respect of the following:

- Archaeology
- Ecology

3.1.6. Environmental Specialists engaged by the Contractor

To fulfil its obligations under the CEMP and to support its Environmental Manager, the Contractor shall engage suitably qualified and experienced professionals including where necessary:

- Waste Manager
- Ecologist
- Archaeologist

3.2. Training

The Contractor must ensure that an Environmental Training and Awareness Programme will be established and that all personnel receive adequate training prior to the commencement of the construction phase. It should be ensured that all personnel are aware of their individual environmental responsibilities and environmental constraints to specific jobs. No person should work on site without first receiving environmental induction.

Training and awareness of personnel will continue throughout the construction phase and refresher training will be provided as required.

Signed records of environmental training will be established and maintained and made available to the Employers Representative.

3.3. Contacts

An emergency contact list will be generated and made available to all project personnel and included in the Contractor's CSEMP. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

A PCEMP contact list is included in Appendix F.

3.4. Environmental Management – Coordination Meetings

In order to provide for effective coordination of environmental monitoring and management where there are simultaneous construction and operation activities being carried out through different Contractors, Cork County Council and/or the Employer's Representative will arrange for regular meetings (every fortnight) to be attended by:

- Cork County Council
- The Employer's Representative
- Contractor
- Contractor Environmental Manager
- Environmental Specialists – engaged by either the Employer or the Contractor

3.5. Monitoring, Inspections and Audits

3.5.1. Monitoring

Mitigation and monitoring will be carried out so that the works are undertaken in a manner that does not give rise to significant negative impacts. All environmental monitoring results will be reviewed by the Employer and the Contractor on an ongoing basis to enable trends or exceedance of criteria to be identified.

The Preliminary Environmental Monitoring Plan for the construction phase of the project is detailed in Appendix B. It outlines the sampling techniques, parameters, analysis, the responsibilities for monitoring, quality control, and locations and that will be monitored during construction.

3.5.2. Inspections

Environmental inspections by the ER will monitor that the works are being undertaken in compliance with the CEMP and that the requirements of the planning approval and associated documentation are being adhered to during construction, in addition:

- Routine inspections of construction activities will be carried out on a daily basis by the Contractors Environmental Manager to ensure all necessary measures to avoid or mitigate environmental impact, relevant to the construction activities are being implemented.
- More detailed inspections will be carried out on a weekly basis by the Environmental Manager. The weekly inspections will be documented on the Weekly Inspection Sheet (Appendix A). Copies of the Weekly Inspection Sheet will be made available to the ER.
- Every second weekly inspection will include a review of environmental documentation and records. This inspection will be recorded and reported to the ER within five days of the inspection taking place.

3.5.3. Audits

Regulatory bodies such as DCENR, DEHLG and NPWS may undertake site visits to monitor compliance with regulatory requirements. The Contractor will facilitate these visits. The Contractor's Environmental Manager shall be available to provide information as required and deal with any issues which may arise on site.

The Contractor's Environmental Manager will be entitled to participate in all audits. Notwithstanding this the ER will provide the Contractor with a copy of each audit report detailing findings, non-conformances identified and proposed corrective action within five days of the audit.

Planned and documented audits aimed at evaluating the conformance of the environmental management system will also be carried out by the contactor. The Contractor's Environmental Manager will establish an Internal Audit and inspection calendar.

The auditor will read the relevant documentation, inspect the site and ask questions and observe in order to determine whether activities and related results comply with the planned arrangements and whether these arrangements are recorded on the Audit Checklist.

The audits items shall include but not be limited to the list below:

- Review of documents and records to determine if all the requirements in the CEMP are being met;
- Site inspection and interviews; and
- Reporting with recommendations.

For any nonconformities found, the auditor initiates a Corrective Action Report (CAR) to describe and record the findings.

The Verification of previous CAR is also recorded on the Audit Checklist and/or the CAR itself.

Upon completion of an audit, the auditor reviews all CAR(s) and prepares an Audit Report to summarise:

- Corrective action requests raised;
- Previous corrective action requests closed; and
- Observations.

3.6. Environmental Incident Response and Investigations

A Preliminary Environmental Incident Response Plan (EIRP) is attached in Appendix C.

As part of the CSEMP the Contractor shall develop a contract specific EIRP. Application of the procedures therein will be the responsibility of the Contractor.

The EIRP is a written procedure to deal with an incident where an incident is defined as a discrete (one-off) occurrence that may result in an adverse impact (or impacts) on the environment or a breach of legislation, which include but are not limited to a significant spillage. It should be noted that EIRP is in addition to the Health and Safety Plan. The EIRP will address any emergency situations which may originate on the site during construction presenting an immediate and serious risk to the environment. The ERP will include provision for minimising the effects of any emergency on the environment. In particular, it will address how accidental/emergency spills of hazardous substances (oils, hydraulic fluids, concrete/cement etc.) will be dealt with.

If an environmental incident occurs on-site the Contractor will ensure that the event is recorded on an Environmental Incident Form. All environmental incidents will be recorded including the following:

- Any malfunction of any environmental protection system;

- Any emission that does not comply with the requirements of the contract (e.g., noise and vibration);
- Any occurrence with the potential for environmental pollution; or
- Any emergency (e.g., significant spillages or fire outbreak).

In the event of an environmental incident, the Contractor will ensure that the following actions will take place:

- The Employers Representative must be immediately notified (within 30 minutes of any event that could give rise to an environmental incident);
- If necessary, the Contractor will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident;
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident. This is to be provided 4 hours following the initial notification.
- A record of all environmental incidents will be kept on file by the Contractor. These records will be made available to the Employers Representative and the relevant authorities such as NPWS, if required.

3.7. Corrective Actions

A corrective action will be implemented to rectify any exceedance of criteria or targets for all the aspects of monitoring. Initially an investigation will be carried out to identify the cause and appropriate remedial measures will be implemented to prevent further exceedances.

Where new or amended environmental control measures are agreed as a result of third-party consultation, the Employer's Representative and the Contractor's Environmental Manager will ensure that the CSEMP is updated accordingly.

3.7.1. Corrective Action Reports

A corrective action is implemented to rectify an environmental problem onsite such as changes to environmental control methods. The Corrective Action Report (CARs) (Appendix A) should detail the cause and effect of an environmental problem on site and the recommended corrective action that is required to remedy it. An appropriate timeline for closing out the corrective actions will be identified by the Contractor.

Corrective actions will be implemented by the Contractor. Corrective actions may arise from the following:

- Environmental inspections or audits;
- Environmental Incidents;
- Environmental Monitoring; and
- Environmental Complaints.

The Corrective Action Report will detail the results of the investigation, any corrective and preventative actions required. The Corrective Action Report should be verified by the Environmental Manager. The Contractor will make all CARs available to the ER.

Details of corrective actions required shall be recorded on the Complaint Form and/ or the Corrective Action Form. The complainant will be informed of the corrective action undertaken. The Environmental Manager will sign off the complaint as closed (with copy to the ER) when the issue has been resolved.

3.8. Reporting

3.8.1. Environmental Compliance Report

The Contractor will submit a weekly Environmental Compliance Report to the ER for review and approval in digital (word and pdf) and hardcopy. The Contractor's Environmental Compliance Report shall contain the following as a minimum:

- Summary of compliance/ non-compliance with the CEMP;
- Environmental Monitoring Programme results and interpretation;
- Key issues noted in inspections and/ or audits;
- Summary record of incidents and corrective actions;
- Summary of environmental complaints; and
- Summary record of environmental training (as appropriate).

Details of the frequency of environmental monitoring to be reported in the Environmental Compliance Report are provided in the Preliminary Environmental Monitoring Plan in Appendix B.

3.8.2. Incident Investigation Reports

The ER will be informed by the Contractor of all environmental incidents immediately and will be provided with an initial report within 24 hours setting out the incident details and cause(s) if known. The Contractor will provide the ER with a copy of the completed Environmental Incident Report (Appendix A) and any further documentation requested by the ER in relation to the incident within 7 days of the incident occurring. The Contractor will respond to all comments made by the ER on any incident.

The Environmental Incident Report will contain details of the incident including the location, known and suspected causes and weather conditions. It will define the scale and actual/ potential impacts (short, medium, long term, temporary/ permanent) as well as required corrective actions and mitigation/ remediation/ compensation measures (as appropriate).

3.9. Environmental Records

The Contractor shall maintain record of monitoring, tests, analytical results, method statement and plans. All records will be kept up dated and will be available for audits, inspections and periodical reporting. The Contractor is required to maintain the following environmental records (as a minimum) which will be made available for inspection to the ER and the relevant authorities, if required:

- Environmental Incident Form;
- Monthly Environmental Compliance Reports;
- Environmental Training Records;
- Register of environmental training;
- Register of environmental complaints;
- Corrective Action Reports;
- Environmental inspection and audit reports;
- All monitoring data (electronically in Excel);
- Waste Record Sheets;
- Safety Data Sheets;
- Chemical Inventory.
- Waste Record.

4. MITIGATION MEASURES

4.1. Environmental Objectives and Targets

Table 4-1 outlines the environmental objectives and targets developed for the works.

The CSEMP shall have a list of environmental mitigation measures appropriate to the works being undertaken. This list shall be generated from the lists contained in the Parent CEMP. The CSEMP shall detail how these will be implemented. In some cases, there shall be a specific plan to deal with certain aspects such as waste, traffic and Invasive Species (see below).

Table 4-1 – Environmental Objectives and Targets

Objective / Principal	Description	Responsibilities	
		ER	Contractor
Ensure construction activities are carried out in accordance with the Conditions of Consent.	Update the CEMP prior to commencement of construction that reflects all environmental constraints and risks identified in the planning approval and sets out all mitigation measures identified in same and additional appropriate mitigation measures as may be necessary.	✓	✓
	Review and update the CEMP if necessary, on a regular basis throughout the construction stage of the project.	✓	✓
	Ensure Contractors comply with the CEMP and implement the controls, procedures, method statements and plans therein.	✓	
	Review and improve these documents on an ongoing basis throughout the project.	✓	✓
Construction work is carried out with minimal impact on the Natural Environment	Construction is carried out in compliance with the CEMP and any associated Method Statements, Plans and Procedures.		✓
	Construction activities, particularly in relation to sensitive habitats and species, are subject to environmental/ecological supervision / under ecological direction as appropriate.		✓
	Guidelines for the control of Japanese knotweed and Himalayan Balsam are followed.	✓	✓
	Minimise pollution by ensuring all mitigation measures are implemented and effective.		✓
	Construction activities are undertaken in accordance with national/international legislation.		✓
	Avoid aqueous pollution and ensure all mitigation measures are effective.		✓
	Effective waste management techniques are adopted on site as per Waste Management Plan.		✓
	A system is in place to respond to environmental emergencies such as spills.	✓	
	Develop and maintain an Environmental Incident Response Procedure and ensure adequate spill response.	✓	✓
	Materials (spill kits) are available on site.		✓
Construction work is carried out with minimal disturbance to landowners and	Minimise potential for noise and vibration, traffic and dust impacts by ensuring all mitigation measures are implemented.		✓
	Minimise disruption to local road users through effective management of traffic and construction related haulage.		✓

Objective / Principal	Description	Responsibilities	
		ER	Contractor
the local community			
Construction work is carried out with minimal impact on archaeology.	All features of archaeological interest to be treated in accordance with the defined mitigation measures.		✓
Adopt a sustainable approach to construction.	Minimise use of natural resources and source materials locally where possible.		✓
	Minimise resource wastage and reuse materials where possible.		✓
	Ensure a policy of reuse and recycling is adopted on the project.		✓
	Ensure energy efficiency is considered when operating plant and machinery and running site offices and compounds.		✓
Provide adequate environmental awareness for all project personnel with training provided where necessary	Ensure all personnel are aware of their environmental responsibilities.		✓
	Appropriate environmental signage shall be erected on site where required.		✓
	Ensure all personnel shall receive induction training appropriate to their needs, prior to commencement of construction.		✓
	Training and awareness of personnel shall continue throughout the construction phase through provision of Tool Box or equivalent. Provide environmental training/talks on environmental issues associated with particular sensitive locations, construction activities and environmental best practice where required.		✓

A suitably qualified Ecological Clerk of Works (ECOW), with experience in supervision of instream works, will be appointed prior to commencement of the works.

4.2. Mitigation Measures

The mitigation measures to be implemented are based on proven technology and techniques which have been agreed with the relevant experts (IFI). Works will be overseen by the ECOW who will liaise with the contractor prior to the commencement of site works and will evaluate the effectiveness of mitigation measures. In the unlikely event that the mitigation measures do not function as planned during construction, it will be role of the ECOW to supplement the mitigation measures to ensure that they function as planned. Ultimately, the ECOW may decide to halt works until mitigation functions effectively.

The following tables contain a summary of the environmental measures that are required to be implemented during the design, mobilisation, construction, commissioning, demobilisation and operational / maintenance phase of the works to be undertaken. All of the requirements shall be considered as a minimum standard to be achieved. Where Contractor input is noted, and when relevant, this shall be addressed in the CSEMP.

Table 4-2 – Hydrocarbons and Waste Management

Topic	Mitigation Measure	Source	Responsibility
Management Plan	A construction and demolition waste management plan shall be developed and maintained by the main contractor prior to construction works commencing on site. The Plan shall meet the requirements of the DoEHLG Best Practice "Guidelines on the Preparation of Waste Management Plans for Construction & Demolition Projects".	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Storage	Careful consideration shall be given to the location of any fuel storage facilities Oil, petrol and other fuel containers shall be double-skinned and bunded to be able to contain 110% volume to guard against potential accidental spills or leakages entering local watercourses linked to the European sites. Bund specification will conform to the current best practice for oil storage such as Enterprise Irelands Best Practice Guidelines. Construction materials will be stored in a secure compound to prevent the potential for vandalism and theft of material	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Fuelling	Dedicated fuel storage areas shall be introduced on-site which shall be a minimum of 50m from watercourses or drains or, alternatively, fueling shall take place offsite	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Leak Inspections	All vehicles and plant shall be regularly inspected for fuel, oil and hydraulic fluid leaks. Suitable equipment, including spill kits, shall be maintained on site to deal with spills	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Vehicle Cleaning	It shall be ensured that all staff are trained and follow vehicle cleaning procedures. Details of the procedures shall be displayed in the work area for easy reference. Use of cleaning chemicals shall be minimised.	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Machinery / Tools Cleaning	Machinery including hand-tools shall never be washed in watercourses or drainage ditches. The location for any washing of machinery shall be agreed with the ECOW prior to the commencement of works.	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Cleaning Areas	It shall be ensured that all areas where liquids are stored or cleaning is carried out are in a designated impermeable area that is isolated from the surrounding area, e.g., by a roll-over bund, raised kerb, ramps or stepped access.	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Concrete Pouring	Concrete pouring shall not take place during heavy rain when run off is likely due to excess water. Shuttering shall be designed	NIS Section 8.2.1	Contractor

Topic	Mitigation Measure	Source	Responsibility
	to accommodate small increases in the volume of material contained within the shuttered area due to rainfall. Pre-cast concrete shall be used if possible; otherwise, all cast-in-place concrete shall be isolated from flowing water for a minimum of 48 hours to allow pH to reach neutral levels.	EcIA Section 14.3	
Wash Down Facilities	Wash down and washout of concrete transporting vehicles shall not be permitted at the location of construction. Such wash down and washout activities shall take place at an appropriate facility offsite or at the location where concrete was sourced.	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Spillages	A detailed spillage procedure shall be put in place and all site personnel shall be trained with respect to the relevant procedures to be undertaken in the event of the release of any sediment, hydrocarbons into a watercourse. Spill kits shall be maintained on site and relevant staff will be trained in their effective usage. All site personnel shall be trained and aware of the appropriate action in the event of an emergency, such as the spillage of potentially polluting substances. In the event of spillage of any polluting substance and/or pollution of a watercourse, Cork County Council, Inland Fisheries Ireland and the NPWS shall be notified.	NIS Section 8.2.1 EcIA Section 14.3	Contractor
Generated Waste	All wastes generated as part of the construction process shall be controlled and managed to ensure environmental protection. All site wastes (hazardous and non-hazardous), shall be stored in designated areas and taken off site frequently to prevent large quantities accumulating. Careful ordering of materials shall be undertaken to minimise quantities present on-site.	EcIA Section 14.3	Contractor
Disposal of Waste	Wastes which cannot be recycled shall be removed from site by a licensed waste contractor to an appropriate licensed landfill facility ensuring adherence to the Environmental Protection (Duty of Care) Regulations 1991.	EcIA Section 14.3	Contractor
Recycling	Segregated waste for recycling shall be removed from site to an appropriate Materials Recycling Facility for reprocessing.	EcIA Section 14.3	Contractor
Construction foul effluent	A dedicated holding tank for storage of construction foul effluent shall be constructed prior to commencement of the main construction activities. The effluent shall be regularly disposed of off-site by tanker by a licensed contractor to an approved licensed facility	EcIA Section 14.3	Contractor

Table 4-3 – Stockpiled Material

Topic	Mitigation Measure	Source	Responsibility
Soil Excavation	Where feasible, soil excavation shall be completed during dry periods and undertaken with excavators and dump trucks. Topsoil and subsoil shall not be mixed together.	NIS Section 8.2.2 EcIA Section 14.3	Contractor
Stockpiles	Stockpiles shall be graded to a <1:4 profile. Topsoil and subsoils shall be stored separately. Stockpiles of mineral soils and peat shall be <2m and <1m respectively. Stockpiles shall be covered with plastic sheeting during wet weather to prevent run-off of silt and shall be located on flat ground where possible. Excavated material shall be used for backfill where possible. Surplus material shall be removed from site.	NIS Section 8.2.2 EcIA Section 14.3	Contractor
Stockpiles	Stockpiles shall be a minimum of 10m from the main Blackwater Channel and shall be separated from sensitive aquatic receptors by silt fences.	NIS Section 8.2.2 EcIA Section 14.3	Contractor

Table 4-4 – Construction Works – Surface Water Management

Topic	Mitigation Measure	Source	Responsibility
Surface Water	Any pumping from the works area shall discharge to a green vegetated area set back from the river bank to allow for settlement and capture of suspended solids or via silt mitigation measures as specified in the Inland Fisheries Ireland "Guidelines on Protection of Fisheries During Construction Works In and Adjacent to Water" (IFI, 2016). Such settlements include lagoon systems and silt tanks discharging through silt socks. These systems shall be incorporated into a detailed Water Management System (WMS) which shall be prepared by the contractor. This shall incorporate the mitigation measures specified by this and other planning documentation and any conditions of planning. The WMS shall be drawn up in consultation with the ECOW and shall take into account any changes in river flows or ground conditions which may have occurred subsequent to the submission of this application. The WMS shall provide detailed designs for each stage of development and shall detail how surface water management will be carried out	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Surface Water	The design of the WMS shall take due consideration of the requirements given in the document "Control of water pollution from Construction Sites – Guidance for	NIS Section 8.2.2	Contractor

Topic	Mitigation Measure	Source	Responsibility
	consultants and contractors (Ciria C532)". The settlement lagoon shall be designed in accordance with the requirement of Section 7.5 of the 'Design of Flood Storage Reservoirs (Ciria B14)' to have an average retention time of 15hours.	EcIA Section 14.4	
Surface Water	The WMS shall be contained within the development's site reline boundary.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Surface Water	Detailed methodologies for the construction of silt management systems (e.g., settlement lagoon, greenfield areas, silt traps, cofferdams, settlement tanks and detailed procedures for pumping water from excavations and from within dammed areas to the relevant silt management systems) shall be specified in the WMS	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Surface Water	Dewatering pumps within excavations shall have appropriate capacity to pump out the residual seepage from excavations to maintain the works area excavation dry. The pumps shall be integrated sumps or shall sit on an appropriately sized drip tray which is monitored and emptied regularly. Where required, submersible pumps shall be deployed.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Surface Water	Pumped flows may contain high levels of silt and there may be possible contamination by hydrocarbons and cement. Thus, these pumped flows must be adequately treated by the WMS prior to discharge to the Blackwater River or other receiving water.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Flood Events	Detailed contingency plans shall be specified to deal with flood events and to manage or remove elements of the development and WMS (i.e., silt fences, lagoon systems, etc.) which could impact on water quality within the Blackwater River SAC in the event of a severe flood event.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Water Quality Monitoring	A detailed water quality monitoring programme shall be implemented as per Table 4.6 below and where discharges fail to meet the specified limits the Ecological Clerk of Works shall have the authority to halt works until outstanding issues are resolved.	NIS Section 8.2.2 EcIA Sections 14.4 and 14.7	Contractor
Water Management System	All elements of the WMS shall be managed and maintained in line with the provisions of a detailed maintenance programme. Daily inspection of the WMS shall be carried out by the ECOW	NIS Section 8.2.2 EcIA Section	Contractor

Topic	Mitigation Measure	Source	Responsibility
		14.4	
Silt fences	Silt fences shall be provided where required between site works and sensitive aquatic receptors. The function of silt fences is to intercept and capture sediment and reduce run-off velocity and erosive. Fences shall be single, double or staggered depending on ground conditions. The silt fence layout shall allow for vehicles or other equipment to pass and to facilitate maintenance. Silt fences shall be in place for each section of works prior to the commencement and must be securely supported with wooden posts. The silt fences shall be examined and certified as fit for purpose by the ECOW prior to the commencement of works.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Fuel Spillage	The WMS shall detail emergency procedures to be put in place in the event of fuel spillages.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Surface water discharge	Identification of greenfield areas within the redline boundary to which surface water can be discharged. The WMS shall ensure that there is sufficient greenfield area available for each section of works and/or shall specify alternative means of surface water management.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Silt Levels	To minimise the potential for elevated silt levels in surface water run-off, the working area used during construction shall be clearly outlined prior to the commencement of works and shall be kept to the minimum area necessary to effectively complete the works.	NIS Section 8.2.2 EcIA Section 14.4	Contractor
Flood Events	Works shall be suspended during severe flood events or when such events are forecast. This makes all activities and measures easier to implement and manage and limits the potential for generation of sediment and mobilisation of both sediment and pollutants downstream.	NIS Section 8.2.2 EcIA Section 14.34	Contractor
Construction Runoff	Works shall be carried out in the dry. Temporary measures, including wheel washing facilities and road sweeping, shall be provided for the duration of the works in this site to ensure that silt contaminated material is not carried onto the site access tracks or carried into the surface water drainage system. Construction runoff from the works area shall be directed through a settlement system prior to discharge.	NIS Section 8.2.2 EcIA Section 14.4	Contractor

Table 4-5 – Fish Pass Work Mitigation Works

Topic	Mitigation Measure	Source	Responsibility
In Stream Works	Because the catchment area of the River Backwater upstream of Fermoy bridge is approx. 1750km^2 with an average flow of 22.284m^3/s, the risk of flooding of the works must be considered Therefore, the Contractor undertaking the works shall register to receive early warning notification of flood events on the river Blackwater. An early warning system is in place based on river levels at Millstreet. Mobile plant shall be removed from potential flood affected areas in the event of a flood warning. Operatives shall also be evacuated from that portion of the site and any static plant or temporary works components will be made safe.	NIS Section 8.2.3 EcIA Section 14.5	Contractor
Topsoil Stripping	Topsoil shall be stripped in advance of the works but the duration that the works area is left without topsoil cover shall be minimised. Silt fences shall be erected where necessary.	EcIA Section 14.3	Contractor

Table 4-6 – Silt Control

Topic	Mitigation Measure	Source	Responsibility
Sit Movement	Silt movement within the working area will be managed through the use of silt curtains and which will be disposed of off-site as part of a site clean-up operation as detailed in Appendix 2 of the NIS.	NIS Section 8.2.2 EcIA Section 14.5	Contractor
Silt Curtains	Silt curtains shall consist of a continuous filament nonwoven, needle punched, 100% polypropylene, UV stabilised geotextile with the following minimum properties: • Characteristic short term tensile strength = 31kN/m; • Elongation at characteristic short-term strength (md/cd) = 80/50 % • CBR puncture strength = 5200N • Effective opening size (O90) = 0.08mm • Vertical water flow (50mm head) = 42 l/m²/s • Mass per unit area = 500g/m²	NIS Section 8.2.2 EcIA Section 14.6	
Silt Fences / Curtains	Each individual silt fence or curtain panel shall be joined together by the use of high strength nylon rope. An overlap of 500mm shall be provided between each adjacent panel and threaded continuously together along the whole length with nylon rope to prevent piping of pollutant. The silt curtain shall be attached to a HDPE float for buoyancy and a steel chain weight fixed along the bottom of the silt curtain, with the size and weight of these determined by the	NIS Section 8.2.2 EcIA Section 14.6	Contractor

Topic	Mitigation Measure	Source	Responsibility
	silt curtain supplier. Appropriately sized and spaced concrete blocks shall also be used to anchor the HDPE float in position.		
Silt Curtain	The silt curtain shall initially be installed as close as possible to the proposed works and then moved from here into its required position to prevent fish being trapped behind it. The Contractor shall carefully choose the type and depth of silt curtain to ensure it is not damaged / swept away during flood conditions. Maintenance will be carried out daily.	NIS Section 8.4 EcIA Section 14.6	Contractor
Silt Curtain	The requirement for additional silt curtains will be determined by the ECOW based on the contractor's detailed methodology and flow conditions in the river prior to commencement of works.	NIS Section 8.4	ECoW
Flood Warnings	In the event of a significant flood warning, the contractor may be obliged to breach the temporary dams in order to reduce the risk of the embankment contributing to increased flood risk.	NIS Section 8.3.2	Contractor
Sandbagging (Damming)	Any bagging which may be put in place to provide temporary flow controls should use gravel aggregate fill rather than sand so that any potential loss of same will not negatively impact upon receiving waters or existing gravel beds. In this respect it is noted that any temporary dam emplacement will be primarily to regulate flow control rather than to create a strictly dry working area as there are no in-situ concrete works proposed.	NIS Section 8.3.2	Contractor
Limitation on Damming	All temporary dams, if required, will be used for as short a time as possible and will be completely removed when required by Fisheries Ireland		Contractor
Suspension of Works During Severe Floods	Works will be suspended during severe flood events or when such events are forecast. This makes all activities and measures easier to implement and manage and limits the potential for generation of sediment and mobilisation of both sediment and pollutants downstream.	NIS Section 8.3.2	Contractor
Monitoring	The following measures shall be adopted with regards to silt monitoring: • Sampling of the Blackwater River to establish a suitable baseline for Suspended Solids and Turbidity • Determining a relationship between Suspended solids and Turbidity. This is to allow monitoring of Suspended Solids levels by monitoring Turbidity levels • Specification of suitable trigger levels for Suspended Solids and equivalent	NIS Section 8.5 EcIA Section 14.7	Contractor

Topic	Mitigation Measure	Source	Responsibility
	Turbidity levels, for a traffic light system (green/continue, amber/caution, red/stop), in response to monitoring of Turbidity levels during the works. • Monitoring of Suspended solids or turbidity during the works, including monitoring of Natural Turbidity levels prior to start of works each day, so that comparison each day can be related to Naturally occurring levels on the day, rather than a possibly exceptionally low baseline. • Ensure temporary suspension of the works, if silt levels are excessive (above the predetermined thresholds), or if the silt curtains rupture or otherwise fail. • Provision for further measures that may be implemented, as appropriate, if silt levels become increase above threshold level, such as, changing the work that is ongoing at the time, implementing additional silt control measures such as straw bales, suspending the work for a period to allow the river run clear. • Modification of silt curtain location as the works vary, to suit the works • Employ a specialist for guidance on the advice with regard to the use of silt curtains. • Provide for ongoing engagement with IFI on the issue of construction methodologies, silt control and threshold levels.		

Table 4-7 – Weir Remediation Works

Topic	Mitigation Measure	Source	Responsibility
In Stream Works	Works shall be overseen by the ECoW who shall liaise with the contractor prior to the commencement of site works and shall evaluate the effectiveness of mitigation measures. In the unlikely event that the mitigation measure does not function as planned during construction, it shall be role of the ECoW to supplement the mitigation measures to ensure that they function as planned. Ultimately, the ECoW may decide to halt works until mitigation functions effectively	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	Works shall comply with The IFI's Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016).	NIS Section 8.4 EcIA Section 14.6	Contractor

Topic	Mitigation Measure	Source	Responsibility
In Stream Works	In order to maintain flows in the river throughout the construction of the pipeline it is proposed to remediate the weir in two sections, undertaking the majority of the work in the dry. This shall be carried out in the period July to Mid Sept, when river levels are at their lowest in accordance with the "Guidelines on the Protection of Fisheries during Construction Works in or Adjacent to Waters", IFI,2016.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	River levels will also be at their lowest and risk of fluvial flooding will be low during the period from July to mid-September inclusive. The sheetpile and sandbag barrier on the upstream face of each section of the works shall be of the order of 2 m high with a free board allowance above an agreed design flood level. The level of the top of the barrier and the temporary dams shall be agreed with the OPW through the Arterial Drainage Act Section 9 Approval process (if applicable) with the maximum height set in order to avoid creating any increased flood risk for the town.	EcIA Section 14.6	Contractor
In Stream Works	The construction methods used within the River Blackwater shall take into account the preservation of stream flows for movement of fish by ensuring a minimum depth of water shall be maintained within the river. In order to maintain flows in the river throughout the remediation of the weir it is proposed to undertake these works in two sections, with majority of the work completed in the dry. This shall be carried out in the period July to Mid Sept, when river levels are at their lowest in accordance with the "Guidelines on the Protection of Fisheries during Construction Works in or Adjacent to Waters", IFI,2016.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	The works shall entail the construction of a temporary dam (sheetpiles and sandbags) upstream of the weir on the west side of the bridge, extending from the bridge to the north bank of the river, followed by the creation of a bund and silt fence or proprietary barrier fence extending above the water level in the river, downstream of the weir which would extend across the width of the weir that is located upstream of the bridge. The contractor would then undertake the remediation works on this section of the weir upstream of the bridge. River bed gravels shall be carefully removed from the work area initially and stockpiled for subsequent riverbed and bypass channel reinstatement. Gravel dredging required between the bridge and	NIS Section 8.4 EcIA Section 14.6	Contractor

Topic	Mitigation Measure	Source	Responsibility
	the weir would be undertaken in this phase also. All temporary dams and bunds shall be removed on completion of this phase		
In Stream Works	The works on the section of the weir downstream of Fermoy Bridge shall only commence after the completion of the fish Bypass channel and the tie in works at the north river bank. This phase shall entail the construction of a temporary dam (sheetpiles and sandbags) upstream of the bridge, extending across the southern arches of the bridge to the south bank of the river, followed by the creation of a bund and silt fence or proprietary barrier fence extending above the water level in the river, downstream of the weir which would extend along the length of the weir that is located downstream of the bridge.	EcIA Section 14.6	Contractor
In Stream Works	Silt movement within the working area shall be managed through the use of silt fences which shall be disposed of off-site as part of a site clean-up operation prior to the completion of the relevant phase of the works. Sandbags may be required locally to close off any gaps between the elements of the proposed system and at the river banks	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	Sandbagging (damming) shall be carefully planned and executed as this carries a risk of negative impacts through generation or introduction of silt and sediment to the river system (if bags burst, for example). Sand-bags (small or 1-tonne) shall be clean and of good integrity, preferably fully sealed (i.e., composed of high-grade polythene, not webbing or hessian). Sand-bags shall be filled with very clean, coarse grade sand with no fines at all. They shall be carefully handled and placed so they don't burst and no other additional material (like clay or soil etc.) shall be introduced to seal gaps. Small (1/4 filled) sandbags shall be on hand to seal gaps/leaks in dams as they arise – this shall discourage the use of clay or soil to seal gaps.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	A silt curtain shall be installed on the river downstream of each section of works to trap any silt generated by the placing or removal of the dams and bunds. The silt curtains shall remain until the dam system have been removed and potentially contaminated water enclosed within the dam system has been pumped out to the water management system as approved by the ECOW.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	The requirement for additional silt curtains shall be determined by the ECOW based on the contractor's detailed methodology	NIS Section 8.4 EcIA Section	Contractor

Topic	Mitigation Measure	Source	Responsibility
	and flow conditions in the river prior to commencement of works	14.6	
In Stream Works	Silt curtains shall consist of a continuous filament nonwoven, needle punched, 100% polypropylene, UV stabilised geotextile with the following minimum properties: o Characteristic short term tensile strength = 31kN/m; o Elongation at characteristic short-term strength (md/cd) = 80/50 % o CBR puncture strength = 5200N o Effective opening size (O_{90}) = 0.08mm o Vertical water flow (50mm head) = 42 l/m²/s o Mass per unit area = 500g/m²	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	Each individual silt fence or curtain panel shall be joined together by the use of high strength nylon rope. An overlap of 500mm shall be provided between each adjacent panel and threaded continuously together along the whole length with nylon rope to prevent piping of pollutant. The silt curtain shall be attached to a HDPE float for buoyancy and a steel chain weight fixed along the bottom of the silt curtain, with the size and weight of these determined by the silt curtain supplier. Appropriately sized and spaced concrete blocks shall also be used to anchor the HDPE float in position.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	The silt curtain shall initially be installed as close as possible to the proposed works and then moved from here into its required position to prevent fish being trapped behind it. The Contractor shall carefully choose the type and depth of silt curtain to ensure it is not damaged / swept away during flood conditions. Maintenance shall be carried out daily.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	Fish shall be removed from the area of river within the barriers and dams and within any silt curtain or sandbag envelope. This activity shall be undertaken by personnel authorised by Inland Fisheries Ireland.	NIS Section 8.4 EcIA Section 14.6	Contractor
In Stream Works	The optimum time for undertaking the works is from July to mid-September when river levels should be at their lowest and the risk of fluvial flooding would be low. In the event of a significant flood warning, the contractor shall breach the temporary barriers/dams in order to reduce the risk of the embankment contributing to increased flood risk.	NIS Section 8.4 EcIA Section 14.6	Contractor

Table 4-8 – Species and Habitats

Topic	Mitigation Measure	Source	Responsibility
Induction	All personnel involved with the project shall receive an on-site induction relating to operations and the environmentally sensitive nature of Natura 2000 sites and the proximity of aquatic habitats.	NIS Section 8.9 EcIA Section 14.11	Contractor
Removal of hedgerows and ditches	The Wildlife Amendment Act 2000 (S.46.1) provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land or such growing in any hedge or ditch from the first of March to the 31st of August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Nonetheless it is recommended that vegetation be removed outside of the breeding season where possible. In particular, removal during the peak-breeding season (April-June inclusive) should be avoided. Such a timeframe would also minimise the potential disturbance of breeding birds outside of the proposed development site boundary.	NIS Section 8.9 EcIA Section 14.11	Contractor
Removal of hedgerows and ditches	If works are carried out during the breeding season, a preconstruction survey shall be carried out by the ECoW who will specify appropriate mitigation.	EcIA Section 14.11	Employer
Habitat Retention	To prevent incidental damage by machinery or by the deposition of spoil during site works, any habitats earmarked for retention in close proximity to the proposed works shall be identified and shall be securely fenced or sign posted early in the construction phase. These shall be clearly visible to machine operators.	NIS Section 8.3.1 EcIA Section 14.11	Contractor
Minimum Depth of Water in Fish Pass	The use of temporary dams will take into account the preservation of river flows for movement of fish by ensuring a minimum depth of water will be maintained either through the existing breach in the weir or through the newly constructed bypass channel.	NIS Section 8.3	Contractor
Fish Removal	Fish will be removed from the area of river within the silt curtain or temporary dams. This activity will be undertaken by Inland Fisheries Ireland or by qualified personnel under IFI section 14 licence.	NIS Section 8.3	Contractor
Demarcation of Leave Strip for River bank works	To protect stream side vegetation from damage where access is required to the river works area, the supervising ECoW will identify areas where construction activity is not necessary and will ensure these areas are securely fenced.	EcIA Section 14.11	Employer
Riparian Treelines	There is approximately 110m of riparian treeline within the red line boundary and within the SAC. The quality of these riparian		Contractor

Topic	Mitigation Measure	Source	Responsibility
	treelines varies. The ECOW shall assess these areas and ensure that impacts are minimized and that in particular mature trees are avoided where it is possible to do so. The removal of a number of mature trees is unavoidable in order to construct the bypass channel		
Reinstatement of Habitats	Post-construction, any habitats removed shall be reinstated with native species. Planted hedgerows will be dominated by hawthorn (70%) which provides high value habitat for invertebrates and its berries provide a valuable food source in autumn. Other native species – hazel, crab apple, holly and guelder rose – will included as minor constituents (30%). Hedgerows will be planted as a staggered double row with minor constituents randomly scattered to create a more native looking hedge. Hedges are best planted as whips with the exception of holly which will be container grown. Standard trees will be planted as 1+1 transplants at approximately 8m spacing and these will be allowed to develop to maturity. Mature trees spaces along the length of a hedgerow provide additional vertical structure and also provide singing posts for song birds. The objective of for hedgerows is to provide a dense structure, approximately 3m in height with a diverse species mix. This type of hedgerow is of high value from an ecological viewpoint. The exact location of hedgerows will be determined by the supervising ecologist and it is envisaged that 50m of hedgerow will be provided.		Contractor
Riverbed Gravels	Gravel island habitats within the site may be used as a source of gravel however there will be no removal of gravel below the waterline (outside of the areas specified for dredging between the Bridge and the weir) and the periphery of all such gravel islands shall be left intact.	NIS Section 8.3	Contractor
Imported Material	Any material that is brought on site to use as fill will have a similar geological profile to existing sediments i.e., sandstone/limestone	NIS Section 8.3	Contractor
Artificial Lighting	Artificial lighting at night has the potential to disrupt and disorientate fish and increase exposures to predation. Lighting during the construction phase will avoid direct illumination of the river where possible and lights will be cowled where necessary to minimise light spill onto aquatic habitats outside the works area.	NIS Section 8.3	Contractor

Table 4-9 – White Clawed Crayfish

Topic	Mitigation Measure	Source	Responsibility
Survey	A survey for this species shall be carried out within the proposed crossing area prior to the commencement of works and any individuals recorded shall be relocated outside the works area under a derogation licence from NPWS	NIS Section 8.12 EcIA Section 14.16	Contractor
Delineation of Working Areas	Prior to construction delimiting areas where construction activity is not necessary and which is to remain off-limits and undisturbed will be outlined by the supervising ECOW and securely marked up on contractor maps and where possible marked out or fenced on site. This species was recently recorded in crevices in proximity to Fermoy Weir and may occur within the works area in eroded crevices. A trapping programme shall be implemented to ensure that any Crayfish within this area are removed prior to the commencement of works. Up to twenty 'Trappy Funnel Crayfish Traps' ballasted with extra rock will be positioned in the footprint of instream works areas during each trapping episode. If flows are too high to remove crayfish prior to commencement of site works then it may be necessary to remove crayfish once the temporary dam is in place. The ECOW will check for crayfish on an ongoing basis during site works and translocated as necessary. A second translocation area will be located adjacent to Fermoy Slipway as agreed with NPWS. The Section 23 and 24 license to capture and translocate White Clawed Crayfish has been received from NPWS	NIS Section 8.12 EcIA Section 14.16	ECOW Contractor
Refuge for Crayfish	It is noted that rock armour is likely to provide suitable refuges for White Clawed Crayfish and this species is likely to recolonise this area after works are complete.	NIS Section 8.12 EcIA Section 14.16	Contractor

Table 4-10 – Invasive Species

Topic	Mitigation Measure	Source	Responsibility
Invasive Species Survey	A survey for invasive species shall be carried out prior to the commencement of works. This is to confirm the extent of infestations as identified by invasive species surveys to date, and to determine whether any new infestations have established in the intervening period. A detailed Invasive species management plan (ISMP) shall be prepared by an invasive species specialist	NIS Section 8.11 EcIA Section 14.15	Contractor

Topic	Mitigation Measure	Source	Responsibility
	based on up-to-date survey data prior to the commencement of site works.		
Prevention of Invasive Species Entering Works	To prevent Japanese Knotweed or other invasive species from outside the site being inadvertently being brought in to the site, the contractor shall be required to inspect, clean and wash down vehicles within a specific area within the site compound before using them on site.	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	Prior notification shall be given to all contractors that parts of the site are contaminated with Japanese knotweed and that they must adhere to this protocol to avoid the spread of the plant within and more importantly, outside of the works area. This includes any site investigation works in advance of commencement of excavation works	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	All stands of Japanese knotweed shall be clearly delineated with hazard tape in a manner visible to machine operators prior to the commencement of works.	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	Appropriate signage shall be put in place to deter any entrance by people or machinery into the areas within which the Japanese knotweed is growing.	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	A buffer zone of at least seven metres shall be put in place in respect to the stand of Japanese Knotweed. This zone shall be clearly marked/fence and no works should proceed within these buffer zones.	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	Where direct disturbance within 7m of a stand of Japanese Knotweed is unavoidable then an invasive species management plan shall be drawn up to ensure that risks are minimised. This includes any site investigation works which may proceed the commencement of site works. This management plan shall include all provisions for site hygiene and appropriate disposal of contaminated soil and subsoil.	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	•Only vehicles required for the works within the contaminated works area should be brought on site and the number of visits minimised as much as practicable. Vehicle movements within this area should be kept a minimum. A specialised wash down area will be created for machinery and footwear. All machinery and equipment (including footwear) should be power washed prior to leaving the contaminated works area within	NIS Section 8.11 EcIA Section 14.15	Contractor

Topic	Mitigation Measure	Source	Responsibility
	this wash down area. They should also be visually checked for clods of soil, bits of vegetation etc. and particular care is required with tracked machinery. This wash down area will be located in close proximity to existing stands and the wash down area will be included in the post-works treatment programme for Japanese knotweed.		
Japanese Knotweed	Any excavation within the contaminated area shall be carried out under the supervision of a qualified ecologist who can identify rhizomes and ensure they are removed if present.	NIS Section 8.11 EcIA Section 14.15	Contractor
Japanese Knotweed	If Japanese knotweed contaminated material is to be removed off site it will require a licence from the National Parks and Wildlife Service in advance of any removal, in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477).	NIS Section 8.11 EcIA Section 14.15	Contractor
Himalayan Balsam	Any Himalayan Balsam within the works shall be hand-pulled and bagged prior to the commencement or site works. It will be then placed in a designated area of the site to decay. The seeds are not particularly robust but may survive for 18 months so a two-year programme of control, which will extend beyond the construction period, will be required. All machinery leaving the site shall be washed down in a designated wash down area in proximity to the site exit to prevent seeds from being spread outside the site boundary.	NIS Section 8.11 EcIA Section 14.15	Contractor
Contaminated Soil Stockpiles	If and where contaminated soil or heaps of high-risk invasive species (i.e., Himalayan Balsam) are to be stockpiled, the area shall be clearly marked out on site.	NIS Section 8.11 EcIA Section 14.15	Contractor
Post Development	Post development any Amber Listed invasive species remaining on the site will be treated via a standard herbicide programme. Herbicides must be used according the manufacturers recommendations and must be suitable for use near watercourses.	NIS Section 8.11 EcIA Section 14.15	Contractor

Table 4-11 – Fish

Topic	Mitigation Measure	Source	Responsibility
Night Works	Construction activities shall be limited to daylight hours where possible and shall minimise night working when main surges of migratory fish are more likely to occur.	NIS Section 8.13 EcIA Section 14.17	Contractor

Topic	Mitigation Measure	Source	Responsibility
Trapped fish	There is the potential for direct impacts on fish species including species such as Atlantic Salmon and Brook Lamprey to become trapped within silt curtain envelopes. Other species such as European Eel, Brown Trout and Dace may also be affected. Where necessary an electrofishing salvage operation shall be carried out (by IFI or by ECoW) to remove any fish that become enclosed within the works area. This will ensure that there will be no significant direct effects on fish species	NIS Section 8.13 EcIA Section 14.17	Contractor

Table 4-12 – Biosecurity

Topic	Mitigation Measure	Source	Responsibility
Crayfish Plague	Crayfish occur within the Blackwater system and establishment of the disease crayfish plague can have highly detrimental impacts on this species. Throughout its European range, this species has been decimated by the impact of Crayfish plague disease which spread to Europe with the introduction of the plague carrier North American species of crayfish. Therefore, as recommended by the Inland Fisheries Ireland a Check, Clean and Dry protocol should be utilised. All wet gear or machinery which has previously come into contact with watercourses should be checked for any silt or mud, plant material or animals. It then should be cleaned and finally dried. Disinfectant or hot water (over 65ºC) should be used to clean all equipment followed by a 24hr drying period. This should be adopted as standard practice in all freshwaters. This will be incorporated into a detailed Biosecurity Management Plan which will be prepared by the contractor and approved by the ECOW prior to the commencement of site works	NIS Section 8.14 EcIA Section 14.18	Contractor
Biosecurity Protocols	Stringent biosecurity measures will be implemented throughout the works following recognised Invasive Species Procedures (e.g., OPW or Irish Water). The best practice principles of Check-Clean-Dry guidance of the Non-Native Species Secretariat (NNSS, 2017), IFI biosecurity protocols (IFI,2010) and Waterways Ireland Marine Notice No. 39/2017 shall be followed during these works, to ensure that crayfish plague and invasive non-native species are not introduced into the proposed working area.	NIS Section 8.14 EcIA Section 14.18	Contractor

Table 4-13 – Habitats

Topic	Mitigation Measure	Source	Responsibility
Grassland Rehabilitation	Grassland area that are damaged and disturbed shall be left to regenerate naturally or shall be rehabilitated and landscaped with standard seed mixtures. The ECOW shall specify suitable new grassland mixes, including native species mixes which are available from specialist suppliers, depending on the ground conditions post construction. A detailed landscape plan has been developed which outlines replacement tree planting within the footprint of the fish bypass channel	NIS Section 8.9 EcIA Section 14.11	Contractor Employer

Table 4-14 – Otters

Topic	Mitigation Measure	Source	Responsibility
Pre-Construction Otter Survey	An otter holt and couch were recorded within 300m of the works area during a survey in relation to the proposed remedial works for the Fermoy Weir. A pre-construction otter survey, including the use of camera traps, will be carried out prior to the commencement of works to ascertain if this holt is being used and to monitor usage during the works period. A derogation licence will be sought for the instream works in relation to Otter couches based on the results if the up-to-date Otter surveys. It is noted that the Otter holt recorded during site surveys is located a considerable distance from site works and therefore a licence in relation to this holt is not considered necessary.	NIS Section 8.10 EcIA Section 14.12	ECOW
Pre-Construction Otter Survey	Any holts found to be present by up-to-date surveys prior to construction shall be subject to monitoring and mitigation as set out in the NRA Guidelines for the Treatment of Otter prior to the Construction of National Road Schemes (2006). If found to be inactive, exclusion of holts may be carried out during any season. No wheeled or tracked vehicles (of any kind) shall be used within 20m of active, but non-breeding, Otter holts. Light work, such as digging by hand or scrub clearance shall also not take place within 15m of such holts, except under license. The prohibited working area associated with Otter holts shall be fenced and appropriate signage erected. Where breeding females and cubs are present no evacuation procedures of any kind shall be undertaken until after the Otters have left the holt, as determined by an ecologist. Breeding may take place at any season, so activity at a holt must be adjudged on a case-by-case basis	NIS Section 8.10 EcIA Section 14.12	Employer
Free Movement	The ECOW will ensure that there are no impediments to prevent free movement of	NIS Section	ECOW / Contractor

Topic	Mitigation Measure	Source	Responsibility
of Otters	otters, for example, between different feeding areas or between holts and a feeding area. The provisions required, which may include leaving gaps in fencing will be specified by the ECOW based on a preconstruction survey.	8.10 EcIA Section 14.12	

Table 4-15 – Construction Works – Bats

Topic	Mitigation Measure	Source	Responsibility
Bats	During the site works, general mitigation measures for bats shall follow the National Road Authority's 'Guidelines for the Treatment of Bats during the Construction of National Road Schemes' NRA (2005) and 'Bat Mitigation Guidelines for Ireland: Irish Wildlife Manuals, No. 25' (Kelleher, C. & Marnell, F. (2006)). These documents outline the requirements that shall be met in the pre-construction (site clearance) and construction phases of developments to minimise negative effects on roosting bats, or prevent avoidable effects resulting from significant alterations to the immediate landscape	EcIA Section 14.13	Contractor
Bats	The contractor will take all required measures to ensure works do not harm individuals by altering working methods or timing to avoid bats, if necessary. The following mitigation measures will be implemented:	EcIA Section 14.13	
	• A Pre-construction survey by the ECoW will be carried out prior to tree felling or crown reduction	EcIA Section 14.13	
Tree Felling	• The ECoW will work with the contractor to ensure that crown reduction on trees in minimised and that trees earmarked for retention are adequately protected.	EcIA Section 14.13	Contractor
Tree Felling	• Tree-felling and crown reduction shall be undertaken in the period September to late October/early November. During this period bats are capable of flight and may avoid the risks of tree-felling if proper measures are undertaken.	EcIA Section 14.13	Contractor
Tree Felling	• Felled trees will not be mulched immediately. Such trees shall be left lying several hours and preferably overnight before any further sawing or mulching. This will allow any bats within the tree to emerge and avoid accidental death. The bat specialist shall be on-hand during felling operations to inspect felled trees for bats. If bats are seen or heard in a tree that has been felled, work shall cease and the local NPWS Conservation Ranger shall be contacted.	EcIA Section 14.13	Contractor
Tree Felling	• Tree shall be retained where possible and no 'tidying up' of dead wood and spilt limbs on tree specimens shall be undertaken	EcIA Section 14.13	Contractor

Topic	Mitigation Measure	Source	Responsibility
	unless necessary for health and safety.		
Tree Felling	• Treelines outside the proposed development area but adjacent to it and thus at risk, shall be clearly marked by a bat specialist to avoid any inadvertent damage.	EcIA Section 14.13	Contractor
Bat Boxes	• As a bio-enhancement measure six bat boxes shall be provided. The location of the bat boxes shall be agreed between the ECOW and contractor.	EcIA Section 14.13	Contractor

Table 4-16 – Construction Works – Birds

Topic	Mitigation Measure	Source	Responsibility
Hedgerow removal	The Wildlife Act 1976, as amended, provides that it is an offence to cut, grub, burn or destroy any vegetation on uncultivated land, or any such growing in any hedge or ditch from the 1st of March to the 31st of August. Exemptions include the clearance of vegetation in the course of road or other construction works or in the development or preparation of sites on which any building or other structure is intended to be provided. Nonetheless, it is recommended that vegetation be removed outside of the breeding season.	EcIA Section 14.11	Contractor
Kingfisher	A pre-construction bird survey shall be carried out prior to the commencement of works. This survey shall focus on Kingfisher which is an Annex I species under the EU Birds Directive.	EcIA Section 14.14	Contractor
Nests	If nests (of any bird species) are recorded within the works area, suitable mitigation measures shall be implemented to prevent impacts to breeding birds	EcIA Section 14.14	Contractor
Protection of trees and hedges	Retention of the hedges, treelines and woodland within the site shall reduce the loss of breeding and nesting habitat for birds. NRA guidelines on the protection of trees and hedges prior to and during construction shall be followed (NRA, 2006b).	EcIA Section 14.11	Contractor

Table 4-17 – Trees

Topic	Mitigation Measure	Source	Responsibility
Tree Protection	All trees/hedgerows to be retained shall be protected in accordance with BS 5837:2012, Trees in relation to design, demolition & construction. Prior to the commencement of any work, or any materials being brought on site, existing trees to be retained are to be protected with temporary fencing. This shall be maintained in good and effective condition until the work is completed. Allow for stabiliser struts to secure fence for	NIS Section 8.9 EcIA Section 14.11	Contractor

Topic	Mitigation Measure	Source	Responsibility
	duration of construction. Fully remove when construction is complete/site demobilised.		
Tree Protection	Significant crown reduction is likely to be required for retained Black Poplar to ensure their stability and survival once the other trees have been removed. The extent of crown reduction shall be specified by the arboricultural consultant following removal of adjoining trees.	NIS Section 8.9 EcIA Section 14.11	Employer
Tree Protection	The protective fencing is to coincide, as far as is practical, with the root protection area (rpa), unless otherwise agreed. all weather notices shall be securely fixed to the fence words such as 'construction exclusion zone - no access	NIS Section 8.9 EcIA Section 14.11	Contractor
Tree Protection	• Materials are never to be stacked within the root spread of the tree; • No oil, tar, bitumen, cement or other material is to be allowed to contaminate the ground; • No fires shall be lit beneath or in close proximity to the tree canopy; • Trees to be retained should not be used as anchorages for equipment or for removing stumps • Root Protection Area (RPA) Outside tree canopy dripline roots or other trees, or for other purposes; • No notices, telephone cables or other services should be attached to any part of the tree; • Cement mixing should not be carried out within the canopy/protected area of the tree; • Rails clamped securely to posts • Soil levels are to be maintained as existing within the root spread of the tree. Any alteration to soil levels in an area up to one and a half times the diameter of the tree canopy must be agreed with the ER	NIS Section 8.9 EcIA Section 14.11	Contractor

Table 4-18 – Fish Bypass Channel Monitoring

Topic	Mitigation Measure	Source	Responsibility
Construction stage Modifications	The DVWK guidance suggests that the characteristics of irregular rough-channel pool passes cannot be calculated accurately and that a degree of testing and modification should be allowed for during the construction phase. Therefore, testing and modification shall be carried out during the construction phase in agreement with IFI. If it is determined that slight modifications are required, e.g., perturbance boulders these shall be agreed with IFI prior	NIS Section 8.15 EcIA Section 14.19	Contractor

Topic	Mitigation Measure	Source	Responsibility
	to implementation.		
Operational Stage Monitoring of flows	Flows within the fish bypass channel and at the entrance and exit points shall be monitored during the operational phase to ensure that the bypass channel is operating as designed and meets the velocity requirements for various fish species	NIS Section 8.15 EcIA Section 14.19	Employer
Debris Build-up	Where significant accumulations of debris occur during operation of the fish bypass channel, these will be removed on an ongoing basis.	NIS Section 8.15 EcIA Section 14.19	Employer
Operational Stage Monitoring	Post construction monitoring of the efficacy of the fish bypass channel for the various target species was recommended (particularly for Twaite Shad) by the independent review RKDVH. The following operational monitoring shall be carried out. • eDNA methods have been proposed as the most effective solution given the catchment location of the fish pass, the range of target fish with distinct life history traits and behaviours, and catchment size. • A meta-barcode all-species approach is proposed, although at a minimum shad and lamprey species should be included. • A baseline shall be established, with post operational monitoring to extend to ten years. • An opportunity to include Freshwater Pearl Mussel (FPM) within the eDNA monitoring programme exists.	NIS Section 8.15 EcIA Section 14.19	Employer

Table 4-19 – Lighting

Topic	Mitigation Measure	Source	Responsibility
Site Lighting	Lighting shall be provided with the minimum luminosity sufficient for safety and security purposes. Where practicable, precautions shall be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas;	NIS Section 8.6 EcIA Section 14.6	Contractor
Site Lighting	Lights shall be switched off when not in use	NIS Section 8.6 EcIA Section 14.6	Contractor
Site Lighting	Lighting shall be positioned and directed so that it does not to unnecessarily intrude on adjacent ecological receptors and structures used by protected species. The primary area of concern is the potential impact on the riparian woodland and the River Blackwater along the southern boundary of the site. There shall be no directional lighting focused outside the working area within the River Blackwater or boundary	NIS Section 8.6 EcIA Section 14.6	Contractor

Topic	Mitigation Measure	Source	Responsibility
	habitats respectively and cowling and focusing lights downwards shall minimise light spillage.		
Lighting	Works shall primarily take place during hours of daylight to minimise disturbance to any nocturnal mammal species.	NIS Section 8.6 EcIA Section 14.6	Contractor

Table 4-20 – Noise

Topic	Mitigation Measure	Source	Responsibility
Best Practice	Best practice noise and vibration control measures shall be employed by the contractor. The best practice measures set out in BS 5228 (2009) Parts 1 and 2 shall be complied with.	NIS Section 8.8 EcIA Section14.10	Contractor
Plant	The potential for any item of plant to generate noise shall be assessed prior to the item being brought onto the site. The least noisy item should be selected.	NIS Section 8.8 EcIA Section14.10	Contractor
Noise Control at Source	If replacing a noisy item of plant is not a viable or practical option, consideration shall be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact	NIS Section 8.8 EcIA Section14.10	Contractor
Mobile Plant not to be left Idling	Mobile plant shall be switched off when not in use and shall not be left idling.	NIS Section 8.8 EcIA Section14.10	Contractor
Regular Maintenance of Plant	All items of plant shall be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.	NIS Section 8.8 EcIA Section14.10	Contractor
Limit on Night Working	Working at night shall be only used if absolutely necessary	NIS Section 8.8 EcIA Section14.10	Contractor

Table 4-21 – Dust

Topic	Mitigation Measure	Source	Responsibility
Dust	A dust minimisation plan shall be formulated	EcIA	Contractor

Topic	Mitigation Measure	Source	Responsibility
Minimisation Plant	for the construction phase of the project to minimise potential impact on terrestrial and aquatic habitats.	Section 14.11	
Site Road Cleaning	Site roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only. Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.		Contractor
Public Roads	Public roads outside the site shall be regularly inspected for cleanliness, and cleaned as necessary		Contractor
Site Road Speed Restriction	Vehicles using site roads shall have their speed restricted, and this speed restriction must be enforced rigidly. Indeed, on any un-surfaced site road, this shall be 20 km per hour, and on hard surfaced roads as site management dictates.		Contractor
Material being Transported	Vehicles delivering material with dust potential shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust. During movement of the soil both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions		Contractor
Wheel Wash Facility	All vehicles exiting the site shall make use of a wheel wash facility, preferably automatic, prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads.		Contractor
Wind Exposure	Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods		Contractor
Rectification of Dust Nuisance	In the event of dust nuisance occurring outside the site boundary, movement of these soils will be immediately terminated and satisfactory procedures implemented to rectify the problem before the resumption of the operations.		Contractor
Regular Review of Plan	The dust minimisation plan shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practise and procedures.		Contractor

Table 4-22 – Working Hours

Topic	Mitigation Measure	Source	Responsibility
Hours of Work	The hours of construction work and site deliveries, unless otherwise amended by the Planning Authority, shall be restricted to the following: • Monday to Friday 0700hrs to 1900hrs • Saturday 0700hrs to 1400hrs • Sunday and Bank Holidays Works prohibited • Deliveries (of materials, plant or machinery) 0800hrs to 1900hrs There may be occasions where it shall be necessary to make certain deliveries outside these times, for example, where large loads are limited to road usage outside peak times.	NIS Section 8.7 EcIA Section 14.9	Contractor

Table 4-23 – Archaeology

Topic	Mitigation Measure	Source	Responsibility
Surveys	Visual survey and inspection, metal detector survey and reporting on gravel bank deposits in advance of any in-channel works taking place, to mitigate for potential archaeological material which may be present or may have been washed downstream and lodged at this location. It is proposed to only take gravel from the top of the gravel bed down to the approximate top of the water level on the day of the works, consequently the survey will be confined to the areas of the gravel banks that are to be impacted on. All necessary Health and Safety measures will be applied. The location of all ferrous and non-ferrous materials contained within the gravel deposits should be recorded, using an appropriate underwater metal detector (Minelab Equinox 800 or equivalent). The locations of any finds should be recorded Differential Global Positioning System (DGPS. Finds should be individually bagged and labelled with the licence number and all relevant information and the findspot mapped using a DGPS capable of sub-metre accuracy. Finds deemed not to be archaeological in nature should not be retained. The visual survey will investigate as far as possible the riverbed, banks and surrounding grounds for any potential archaeological and architectural materials which will be recorded (including a record of condition etc) and photographed.	Archaeological Screening Report	Contractor
Monitoring	Archaeological monitoring of gravel deposit removal, which may include or occlude	Archaeological Screening	Contractor

Topic	Mitigation Measure	Source	Responsibility
	archaeological features, finds or deposits associated with the early development of the town and with crossings of the river adjacent to this location.	Report	

5. SUPPLEMENTARY / SUPPORTING DOCUMENTS

This document is supported by a number of preliminary plans that will provide further guidance on the implement of specific aspects of the CEMP.

5.1. Preliminary Environmental Monitoring Plan

A Preliminary Environmental Monitoring Plan is contained in the Appendix B. The monitoring activities to be implemented during construction and the reports generated in relation to environmental monitoring are detailed within this plan. All environmental monitoring results will be reviewed by the Contractor on an ongoing basis to enable trends or exceedance of criteria to be identified.

5.2. Preliminary Environmental Incident Response Plan

A Preliminary Environmental Incident Response Plan is contained in Appendix C.

5.3. Contractor's Traffic Management Plan

The Contractor's Traffic Management Plan is contained in Appendix D.

5.4. Preliminary Waste Management Plan

A Preliminary Waste Management Plan is contained in Appendix E. Note that the Waste Management Plan should be coordinated with the Invasive Species Management Plan regarding the disposal of soil infested with Invasive species.

APPENDIX A

Preliminary Environmental Management Forms

A1 Corrective Action Form CAR No.:

Nature: ☐ Complaint ☐ Inspection ☐ Audit ☐ Environmental Monitoring ☐ Environmental Incident ☐ Other. Specify	
Description of problem and date identified:	
Requested by:	Date:
Investigation Findings:	
Investigated By:	Date:
Corrective Action Required:	
Handled By:	Completion Date:
Preventive Action Required:	
Handled By:	Completion Date:
Verification:	
Corrective / Preventive Yes □ Action Taken:	
No □	
Corrective / Preventive Yes □ Action Effective:	
No □	
Verified By (Environmental Manger):	Date:

A2 Complaint Form

Name:	Address:
Phone Number:	Email Address:
Nature of Complaint ☐ Air (dust, particulates emissions, gas, odour) ☐ Water (stream pollution, mud) ☐ Land (Waste, oil spills, landfill, hazardous waste) ☐ Noise (hauling trucks, equipment) ☐ Housekeeping (wastes, mud/ dust on public road) ☐ Others (please specify):	
Details of complaint:	
Sign:___Date: ___	
Office Use Only Complaint Number:_____Corrective Action Number:_____Site condition at the time of complaint: Corrective /Preventive Action Taken: Complaint Closed by Environmental Manager:_____Date:	

A3 Environmental Complaints Register

Complaint No.	Date	Time	Name of Person Making Complaint	Address	Phone Number	Email Address	Complaint Transmittal Type	Site condition at the time of complaint	Action Required	Corrective Action Number	Response given (Y/N)	Closed Date

A4 Environmental Incident Form CAR No.:

Date of Incident:	
Contractor: Contract Area:	
Witness: Role: Other Role: Witness:	
Description of location of Incident:	
Description of Incident:	
Cause of Incident:	
Weather Condition at the time of incident: Condition: Sunny/ Fine/ Overcast/ Light rain/ Heavy rain Temperature: °C Humidity: High/ Moderate/ Low Wind: Calm/ Light Breeze/ Strong Wind Direction:	
Scale of Incident:	□ Small scale (within site) □ Isolated Site (within site) □ Large scale (outside site) □ Isolated Site (outside site)
Potential Impacts:	□ Air Pollution □ Surface Water □ Groundwater □ Other: Pollution Pollution □ Noise Pollution □ Soil Pollution □ Impact on Protected Areas
Have environmental control measures been implemented	
Are the control measures inappropriate or ineffective	
Describe the non-compliance with reference to the CEMP	
Proposed corrective action	
Personnel responsible for corrective action?	
Signature on closure (Environmental Manger): Date of closure:	

A5 Weekly Environmental Inspection Record Sheet

Contractor/ Sub-contractor:	Contract Area:
Inspection Reference/ Number:	Date:
Inspected by:	Role:
Other Attendees (Role)	
Weather Condition: Temperature: Rainfall: Wind speed and direction:	
Inspection Notes:	

A6 Weekly Environmental Inspection Record Sheet

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed	Action by Date	Signed complet-ion date
	Yes	No	n/a			
General						
Confirm all works are confined to permitted work sites.						
Confirm works are undertaken within approved work times including haulage.						
Others (please specify)						
Air Quality and Dust Control						
Are the construction sites watered to minimize dust generated?						
Are stockpiles of dusty materials covered or watered?						
Cement debagging process undertaken in sheltered areas						
Are all vehicles carrying dusty loads covered/watered over prior to leaving the site?						
Does the public road have dirt/ dust or mud on it?						
Are dust controlled during percussive drilling or rock breaking?						
Hoarding provided along boundaries and properly maintained (any damage / opening observed, please indicate the location).						
Are speed control measures applied? (e.g. speed limit sign)						
Are equipment and vehicles regularly maintained?						
Others (please specify)						
Water Pollution Control						
Are water discharge licenses valid?						
Are conditions of the license compiled with? (check the monitoring records and observe physically)						
Are measures provided to properly direct effluent to silt removal traps and hydrocarbon interceptors?						
Are sedimentation traps and tanks free of silt and sediment?						
Is sand and silt settled out in wheel washing bay and removed?						

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed	Action by Date	Signed complet-ion date
	Yes	No	n/a			
Are leaks and spillages at the site cleared immediately?						
Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? (e.g., provide drip trays)						
Are hazardous liquids/ chemicals stored in bunded areas?						
Trained staff are assigned for dealing with spills?						
Are spill kits / sand / saw dust used for absorbing chemical spillage readily accessible and replenished?						
Others (please specify)						
Noise and Vibration Control						
Are noise and vibration instruments operating properly?						
Are noise limits being adhered to?						
Is plant so it minimises construction noise sensitive receptors?						
Are all vehicles and mechanical plant used on the works fitted with effective exhaust silencers and maintained in good and efficient working order?						
Are vibration limits being adhered to?						
Others (please specify)						
Waste Management						
Is the site kept clean and tidy? (e.g., litter free, good housekeeping)						
Are separated labelled containers / areas provided for facilitating recycling and waste segregation?						
Are correct containers being used for segregation?						
Are construction wastes / recyclable wastes and general refuse removed off site regularly?						
Are construction wastes collected and disposed of properly by licensed collectors?						
Are chemical wastes, if any, collected and disposed of properly by licensed collectors?						
Are drip trays free of oil and water?						

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed	Action by Date	Signed complet-ion date
	Yes	No	n/a			
Is litter, foam or other objectionable matters in nearby water drain/sewer cleaned?						
Are asbestos wastes handled by registered professionals?						
Is there a complete record of waste transfer notes?						
Others (please specify)						
Protection of Flora and Fauna						
Is there any visible damage to flora and fauna?						
Others (please specify)						
Protection of Historical Heritage						
Are earthworks being monitored by a suitably licensed and qualified archaeologist?						
Others (please specify)						

A8 Visual Dust Check Monitoring Form

Date	Time	Location Description	Dust Presence (Y/N)	Intensity (Slight/ Moderate/ Heavy)	Description of Action to be taken	Other notes on conditions likely to lead to dust release (e.g. (weather and nature of construction activity)	Name of Inspector

A9 Weather Conditions Record Sheet

Date	Time	Weather conditions (general)	Rainfall	Wind Speed (m/s)	Wind Direction	Sea state	Visibility	Implications for monitoring	Name of Recorder

A10 Waste Removal Record Form

Date	Time	EWC Code	Weight (kg)	Volume (m^3)	Waste Facility Waste is being removed to (include Licence/Permit Number of Facility)	Waste Transport Contractor (include Licence/permit number & Vehicle Reg number)	Name of Inspector

APPENDIX B

Preliminary Environmental Monitoring Plan

Fermoy Weir Remediation and Fish Bypass Channel

Parent Environmental Monitoring Plan

June 2022

T.J. O'CONNOR & ASSOCIATES
CIVIL & STRUCTURAL CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
PH: 01 2952321, FAX: 01 2954541, EMAIL: TJOC@IOL.IE

Document Verification

Client:	Cork County Council
Project Name:	Fermoy Weir Remediation and Fish Bypass Channel
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File Name:	Parent Environmental Monitoring Plan

Revision Code	Suitability Code	Description of Revision	Prepared By	Checked By	Approved By	Date of Issue
C01	AP	Planning Issue	DC	MV	DC	08.06.2022

CONTENTS

TABLES

1. WATER QUALITY MONITORING

1.1. Wastewater Discharge Licence

Where the Contractor proposes discharging effluent (including groundwater) from the site to waters or to a sewer it shall obtain at its own cost and expense all consents, approvals, and/or licences required and shall strictly comply with all conditions, constraints and requirements imposed by same.

1.2. Limits

Discharge standards for each discharge will be specified in the discharge licences granted by Cork County Council and / or licence or certificate of authorisation issued by the EPA as appropriate.

1.3. Monitoring Locations

Discharge water quality will be sampled after it has undergone silt removal and passed through hydrocarbon interceptors. Monitoring samples will be collected prior to discharge to the sewer or “waters”.

1.4. Monitoring Schedule

The discharges shall be monitored at a frequency specified in the discharge licence granted by Cork County Council. The minimum frequency of the sampling will be weekly but it could be daily.

Flow rates will be monitoring continuously and recorded as peak and average daily flows l/s.

1.5. Methodology

Monitoring will be carried out in accordance with ISO 5667 Water Quality Sampling standards.

The field water quality meter(s) will be calibrated as per the instruction manual prior to use. Measurements are taken directly from the discharge when possible.

Grab samples will be collected in an appropriate sample container. In addition, a grab sample of the groundwater discharge will be collected monthly in appropriate sample containers. All grab samples will be sent to an accredited laboratory for analysis. Collected samples will be stored at less than 4°C and dispatched, under chain of custody, for laboratory analysis. It will be ensured that samples are analysed within their specified holding times. It will be ensured that all laboratory limits of detection are below the relevant standards.

The field quality control samples will be incorporated into the discharge monitoring programme which will include duplicates, blanks and spikes.

All non-dedicated, non-disposable, sampling apparatus will be properly decontaminated prior to its use in the field to prevent cross-contamination. Equipment will be decontaminated after usage (between sampling locations or on an as needed basis).

Flow rates will also be continuously monitored at each discharge location.

1.6. Records and Reporting

Field and laboratory results will be entered into a digital database by the Contractor for comparison with targets on a weekly basis. All data will be validated by the Contractor to eliminate errors. Data validation will include the assessment of field and laboratory quality control samples. Results will be recorded in accordance with the Water Quality Reporting Form included in the Environmental Forms at Appendix A of the CEMP.

Where monitoring results indicate values in excess of the relevant targets, data validation will be undertaken (i.e. examine the data to ascertain whether a false reading may have been obtained and obtain a repeat test, if practicable or required).

The following records will be kept and maintained by the Contractor and made available to the ER;

- All discharge flow measurements in Excel spreadsheets;
- Chain-of-custody records;
- Laboratory certificates of analyses in electronic format (pdf and Excel spreadsheets); and
- Field and laboratory results for all discharges in Excel spreadsheets.

Measures set out in the Construction Industry Research and Information Association (CIRIA) on the control and management of water pollution from construction sites will be adhered to. Environmental good practice will be followed at all times; specific measures are addressed in the CEMP.

The corrective action procedure will be implemented if discharge standards are exceeded. This will include an investigation of the cause and undertaking measures to remedy or prevent it occurring in the future.

Irish Water's incident reporting measures (HSQE-SOP-024-FM-008) and EPA Guidance on environmental incident reporting shall be followed if EPA discharge licence or certificate of authorisation is in place.

Discharge monitoring results will be submitted in the monthly environmental report to the Employer's Representative for review and approval. The report will include the interpretation of results and highlight exceedances of discharge standards as well as providing details of any corrective actions.

Reporting to Cork County Council and / or the EPA will be as specified in the discharge licence.

The monitoring programme may be amended by Irish Water depending on the scope, extent and potential impact of construction activities, data being observed and measured and the assessment of impacts arising.

2. GROUNDWATER MONITORING

2.1. Introduction

Prior to the construction works, groundwater quality sampling and analysis will be undertaken in order to define baseline water quality. Groundwater will also be monitored throughout the construction phase for both quality and water levels. It should be noted that the groundwater beneath the site represents locally important aquifers. There are no groundwater protection zones in the immediate vicinity of the site.

2.2. Target

The purpose of the monitoring is to determine if there is a material deviation from baseline as a result of potential input of pollutants. This will be identified by examining upward trend in the concentration of pollutants or detections of polluting substances such as hydrocarbons that were previously undetected.

2.3. Monitoring Locations

TBC

2.4. Monitoring Schedule

If required, monthly monitoring of groundwater quality will take place for parameters which may include the following:

- pH (pH units);
- Conductivity (µS/cm);
- Dissolved Oxygen (% and mg/l);
- Temperature (°C);
- Turbidity (NTU);
- Total Dissolved Solids (mg/l);
- Hydrocarbons (mg/l);
- Major cations and anions including: Barium, Aluminium, Calcium, Magnesium, Potassium, Iron, Copper, Zinc, Manganese, Sulphate, Chloride, Nitrate, Nitrite and Hardness.

Water level data will also be collected.

If required, in situ data loggers recording groundwater level, conductivity and temperature will be installed in each monitoring borehole during the construction phase. Data will be set to log at hourly intervals as a minimum and will be downloaded on a monthly basis. Data loggers will be calibrated and maintained regularly.

2.5. Methodology

Sampling will be carried out in accordance with ISO 5667 Water Quality Sampling standards, in particular Part 11: Guidance on sampling of ground waters. The boreholes will be adequately purged (i.e. 3 times the well volume) prior to sample collection. Also, the field parameters, pH, conductivity and DO should have stabilized (± 10% for three consecutive readings) prior to sample collection.

Conductivity, pH, dissolved oxygen, temperature and turbidity can be measured with a portable water quality probe and a flow through cell. Final stabilised parameter after

purging will be recorded. The meters will be calibrated as per the instruction manual prior to use.

A sample will be collected in an appropriate sample container. For the metals sample it will be filtered in the field through a disposable 0.45 µm filter. All grab samples will be sent to an accredited laboratory for analysis. Collected samples will be stored at less than 4°C and dispatched, under chain of custody, for laboratory analysis. It will be ensured that samples are analysed within their specified holding times. It will be ensured that all laboratory limits of detection are below the relevant standards. The dissolved metals will be tested for using the field filtered sample.

Field quality control samples will be incorporated into the groundwater quality monitoring programme which will include duplicates, blanks and spikes.

All non-dedicated, non-disposable, sampling apparatus including groundwater pumps will be properly decontaminated prior to its use in the field to prevent cross-contamination. Equipment will be decontaminated after usage (between sampling locations or on an as needed basis).

In situ data loggers recording groundwater level, conductivity and temperature will be installed in each monitoring borehole before the construction phase. Data will be set to log at hourly intervals as a minimum and will be downloaded on a monthly basis. Data loggers will be calibrated and maintained regularly.

2.6. Records and Reporting

All physico-chemical field analyses (pH, DO, conductivity, temperature, turbidity) collected in the field will be recorded. Field and laboratory results will be entered into a digital database for comparison with the baseline and relevant standards on a monthly basis. Data validation will include the assessment of field and laboratory quality control samples.

The following records will be kept and maintained:

- All physico-chemical field analyses (pH, DO, conductivity, temperature, turbidity) collected in the field on the Water Quality Field Parameters sheet;
- Field notes detailing purging times and field parameter stabilisation;
- Chain-of-custody records;
- Laboratory certificates of analyses in electronic format (pdf and Excel spreadsheets);
- Field and laboratory results for groundwater quality in Excel spreadsheets; and
- Groundwater levels and elevations (referenced to specified datum), conductivity and temperature results from data loggers in Excel spreadsheets.

Groundwater quality and level monitoring results will be submitted in the monthly environmental report to the Employer's Representative for review and approval. A discussion of the significance of the results and a summary and conclusions will be provided by the Contractor.

Should any sustained upward trend or polluting substances that deviate from the baseline be detected then a corrective action procedure will be implemented. First data validation will be undertaken (i.e. examine the data to ascertain whether a false reading may have been obtained and obtain a repeat test, if practicable or required). If the result is true an initial investigation to identify the cause and then implementation of appropriate remedial measures to prevent further unintentional indirect discharges. Investigations may involve

additional site investigation and soil and groundwater sampling, and quantification of volumes or mass of discharge substance(s).

The monitoring programme may be amended by Irish Water depending on the scope, extent and potential impact of construction activities, data being observed and measured and the assessment of impacts arising.

3. VIBRATION MONITORING

3.1. Introduction

The purpose of the vibration programme is to ensure that the potential impacts from vibration levels are monitored and controlled so as to avoid any local structural damage.

The primary concern regarding vibration is with the residential and commercial buildings adjacent to the proposed site and with Fermoy Bridge. Archaeologically protected structures are the other sensitive receptors.

3.2. Limit Values

A vibration Peak Particle Velocity trigger limit of 6 mm/s (in any direction) will be imposed on all activities likely to cause vibration at vibration sensitive locations. This is a trigger level at which action is required to reduce vibration levels.

The maximum level not to be exceeded at the nearest other vibration sensitive location is 12 mm/s peak particle velocity (when measured in any one of the three mutually orthogonal plains).

3.3. Monitoring Locations

TBC

3.4. Monitoring Schedule and Frequency

Monitoring will be undertaken on a 24 hour, 7-day basis for the duration of construction activity generating significant vibration.

A period of baseline monitoring will be carried out prior to the start of construction activities (including any demolition or site clearance works) of at least one 30-day period. The baseline monitoring will be carried out using the same techniques and same site locations as identified during the construction phase.

3.5. Methodology

Monitoring will be carried out by the Contractor with due regard to the following accepted Guidance and Industry Standards:

Measurement and Assessment of Groundborne Noise and Vibration, *Association of Noise Consultants*, 2012.

To ensure compliance with the specified vibration limit, monitoring will be undertaken using a digital seismograph. The seismograph will be calibrated as per the instruction manual.

Each vibrograph will be certified as being in proper working order and will unless otherwise approved, record vibrations in three directions simultaneously with data showing the amplitude and frequency of the vibrations.

Equipment maintenance and servicing will be carried out according to manufacturer's recommendations. All site servicing will be carried out by appropriately trained staff, and records will be kept of all service visits.

3.6. Records and Reporting

All vibration monitoring will be recorded and maintained in an Excel spreadsheet.

In the event of vibration levels exceeding the specified trigger limit of 6 mm/s at a sensitive location, the Contractors Environmental Manager will be notified and further mitigation will be implemented.

Vibration monitoring results will be submitted to the environmental manager to be contained in the monthly environmental report with exceedances of limit values highlighted. A discussion of the significance of the results and a summary and conclusions will be provided by the Contractor. Details of corrective actions for vibration limit breaches will be reported.

The monitoring programme may be amended by Irish Water depending on the scope, extent and potential impact of construction activities, data being observed and measured and the assessment of impacts arising.

4. NOISE MONITORING

4.1. Environmental Monitoring – Noise

The principal sensitive receptors for noise are residences, wild birds and mammals. Noise will be measured by the Contractor at selected locations on the site boundary to be agreed with the Employer's Representative.

4.2. Limit Values

Noise levels will not exceed the following limits in Table 4-1 from all sources or not exceed by more than 3dB(A) the existing ambient noise level, Leq, at the control station measured over the same period, whichever level is greater.

Table 4-1 – Limits for Total Noise Levels

Days & Times	LAeq (1hr) dB	LpA (max) slow dB
Monday to Friday 08:00 to 18:00 hrs	70	80
Monday to Friday 18:00 to 22:00 hrs	60	65
Saturday 08:00 to 13:00 hrs	65	75
Sundays and Bank Holidays 08:00 to 13:00 hrs	60	65

4.3. Monitoring Locations

The monitoring will be carried out at site boundary locations to be agreed with the Employer's Representative. The ambient noise level, Leq, and LAmin and LAmax from all sources measured between 1.2 to 1.5 metres above ground level. The noise measurements will be carried out at least 3.5 metres from any reflecting structure other than the ground. The proposed noise monitoring locations may be amended during the construction phase, subject to the nature of works at the different site compounds and with the approval of the Employer's Representative.

4.4. Monitoring Schedule

Airborne noise from construction sites will be monitored continuously. It is proposed that monitoring be undertaken on a 24 hour, 7-day basis Noise levels will be recorded at hourly intervals as a minimum. A period of baseline monitoring will be carried out prior to the start of construction activities (including any demolition or site clearance works) of at least one 30-day period. The baseline monitoring will be carried out using the same techniques and same site locations as identified for during the construction phase. Monitoring will be carried out with due regard to the following accepted Guidance and Industry Standards:

- Association of Noise Consultants, Measurement and Assessment of Groundborne Noise and Vibration, 2012.
- BS 7445-1:2003 Description and measurement of environmental noise;
- ISO 1996-1, Acoustics Description, measurement and assessment of environmental noise Part 1: Basic quantities and assessment procedures;
- EPA, Guidance Note for Noise in Relation to Scheduled Activities 2006; and
- EPA, Environmental Noise Survey Guidance Document, 2003.

Active noise monitors will be installed at each location and secured. The meters employed will be Type 1 Integrating Sound Level Meters / Analysers, with resolution of 0.2dB. The meters will be calibrated as per the instruction manual.

Measurement data will be collected continuously by the noise monitors and downloaded either manually on a weekly basis or via remote telemetry. Equipment maintenance and servicing will be carried out according to manufacturer's recommendations. All site servicing will be carried out by appropriately trained staff, and records will be kept of all service visits.

Hand held monitors will be available to measure noise levels at noise sensitive locations or in response to complaints.

4.5. Records and Reporting

All noise monitoring will be recorded and maintained in an Excel spreadsheet (or equivalent database) by the Contractor's Environmental Manager. Data may be validated by the contractor and evaluated to determine that weather conditions do not hinder the data's representivity.

In the event of noise levels exceeding the specified limits, the Contractor's Environmental Manager will notify the Employer's Representative and relevant regulatory authorities as soon as practicable.

Noise monitoring results will be submitted in the monthly environmental report with exceedances of limit values highlighted. A discussion of the apparent noise sources and the significance of the results and a summary and conclusions will be provided by the Contractor. Details of corrective actions for noise emission breaches will be reported.

The monitoring programme may be amended by Cork Co. Co. depending on the scope, extent and potential impact of construction activities, data being observed and measured and the assessment of impacts arising.

5. DUST MONITORING

5.1. Introduction

The Contractor will undertake a dust monitoring programme. Construction activities are required to be planned by the Contractor to minimise dust generation and consider adverse weather conditions. General dust control activities will include, where appropriate and practicable: wind breaks and barriers, frequent cleaning and watering of the construction site and associated access roads, control of vehicle access, vehicle speed restrictions, appropriate sitting and coverage of stockpiles, washing of equipment at the end of each work day and prevention of on-site burning.

5.2. Limits

The main target is to minimise the release of dust during construction so that it does not cause a nuisance at a sensitive place.

The site average boundary compliance limit is as follows:

- Dust levels at the site boundary will not exceed 350 mg/m2 averaged over a continuous period of 30 days.

5.3. Monitoring Locations

Dust monitoring stations will be installed and maintained by the Contractor (No. and locations to be agreed with the Employer's Representative) in order to provide details of ambient dust concentrations or deposition rates at the site boundary. Monitoring at, or close to, the site boundary is required in order to record the highest dust emissions.

5.4. Monitoring Schedule and Frequency

The Contractor will carry out a period of baseline monitoring prior to the start of construction activities (including any demolition or site clearance works) of at least one 30-day period. The baseline monitoring will be carried out using the same techniques and same site locations as identified for during the construction phase.

Dust monitoring during the construction phase will be undertaken on a continuous 30-day basis.

During the post construction phase dust monitoring will continue using the same techniques and same site locations for a further 1 continuous 30-day period.

5.5. Methodology

Care needs to be taken with regard to the microenvironment in positioning of samplers. For example, sampler inlets will be located in a clear, unobstructed position, and some metres away from any large structures (such as walls of buildings) that might interrupt airflow.

The sampler head should ideally be located between 1.5 to 4m above ground level.

The Contractor will measure dust deposition by collecting the deposited dust in a dust deposition gauge (horizontal surface) in accordance with standard methods. Sampling will be carried out over a continuous period of 30 days. The mass of the collected material will

then be determined by gravimetric analysis at an accredited laboratory and the results expressed in terms of mg/m^2/day.

One active monitoring unit for PM10 will be provided. A certified reference sampler tested for equivalence to the European reference samplers will be utilised. Concentrations are to be averaged over a 24-hour period.

Weather conditions such as wind speed and direction and rainfall frequency and amounts that prevail the monitoring period will be observed and recorded.

These procedures will be undertaken by appropriately qualified and experienced personnel.

At all sites, an inspection for visible dust emissions in the vicinity of the site boundary (internal and external) will be conducted by the Contractor at least once on each working day. Visual inspections will also be carried out at any sensitive receptor locations specifically the residences near the proposed pumping station.

The monitoring programme may be amended by Cork Co. Co. depending on the scope, extent and potential impact of construction activities, data being observed and measured and the assessment of impacts arising.

6. TERRESTRIAL ECOLOGY MONITORING

6.1. Introduction

The principal issues of concern are the otters that may be disturbed a result of the works. Himalayan Balsam which is known to be present on the WwTP site is dealt with under the Invasive Species Management Plan (included as an Appendix to the Ecological Impact Assessment).

6.2. Methodology

A pre-construction otter survey will be carried out by the Contractor prior to the commencement of works. If otter holts or resting areas are identified within 150 m of the proposed works then work shall be halted and where possible this area shall be avoided.

Any holts found to be present will be subject to monitoring and mitigation as set out in the NRA Guidelines for the Treatment of Otter prior to the Construction of National Road Schemes (2006b). If found to be inactive, exclusion of holts may be carried out during any season.

No wheeled or tracked vehicles (of any kind) shall be used within 20 m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance shall also not take place within 15 m of such holts, except under license.

The prohibited working area associated with otter holts shall be fenced and appropriate signage erected. Where breeding females and cubs are present no evacuation procedures of any kind shall be undertaken until after the otters have left the holt, as determined by a specialist ecologist. Breeding may take place at any season, so activity at a holt must be adjudged on a case by case basis. The exclusion process, if required, involves the installation of one-way gates on the entrances to the holt and a monitoring period of 21 days to ensure the otters have left the holt prior to removal.

APPENDIX C

Preliminary Environmental Incident Response Plan

Fermoy Weir Remediation and Fish Bypass Channel

Parent Environmental Incident Response Plan

June 2022

T.J. O'CONNOR & ASSOCIATES
CIVIL & STRUCTURAL CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
PH: 01 2952321, FAX: 01 2954541, EMAIL: TJOC@IOL.IE

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TABLES

1. INTRODUCTION

This Parent Environmental Incident Response Plan (parent EIRP) is to be updated by the Contractor to create the final Daughter EIRP which will take account of their existing procedures for dealing with environmental emergencies. The final Daughter Plan will be drafted in consultation with Cork Co Co.. The Contractor will be in readiness to implement the EIRP at all times.

The EIRP addresses any emergency situations which may originate on the site during construction and will include provision for minimising the effects of any emergency on the environment. In particular, it will address how accidental/emergency spills of hazardous substances (oils, hydraulic fluids, concrete/cement etc.) will be dealt with.

2. INITIAL RESPONSE

The potential for environmental incidents occurring is particularly dependant on the scope of works being carried out and the method of construction under any particular works contract.

For that reason, the Contractor shall prepare a contract-specific Environmental Incident Response Plan. This plan shall incorporate the following as a minimum in relation to the initial response to an incident:

1. Address any actual or potential impact on people's safety;
    - provide containment and safeguard life
    - stop the activity and make the area safe
    - provide or initiate medical care as required
2. Address any actual or potential impact to the environment or community or property and assets;
    - identify the spilt substance
    - stop source of spill if safe to do so, where appropriate PPE;
    - contain spill using appropriate spill kits;
3. Advise a supervisor or manager;
4. Inform Irish Water and the Employer's Representative;
5. Inform the existing operator;
6. Inform other contractors operating on the site;
7. Gather as much information as possible pertaining to the incident. Complete the Environmental Incident Form;
8. Assess whether the spill can be cleaned up, if you cannot report to the supervisor to get more resources or if necessary call in a specialist contractor;

Any waste or hazardous waste residuals or potentially contaminated sludge from spill clean-up shall be stored in appropriate receptacles or containers, or in bunded storage areas prior to their removal by an EPA licensed contractor. Spill cleanup kits will be restocked as required.

3. GENERAL REQUIREMENTS

Planned works / shut downs: It is necessary for Cork Co Co to notify the EPA and statutory stakeholders eight weeks in advance of progressing with any scheduled / planned works, which are likely to give rise to an environmental incident (untreated discharge, partially treated discharge/ process instability). A method & mitigation statement shall be prepared and submitted by the Contractor to Irish Water for review and agreement no less than Ten weeks from proposed start date of said works. For minor works e.g. diverting flows, power outages, clearing of tanks etc. the Contractor shall provide the EPA with a minimum of two weeks' notice - where no discharge / impact is perceived (in the event of an potential / unforeseen issue during the works).

Emergency Response plans: In the event of a pollution incident, the EPA will request a copy of the ERP. The ERP should be cognisant of the EPA Guidance- *Emergency Response Procedures (ERP) Issue No: 1, Revision No: 1, Date of Issue: 23/12/10*.

Incident reporting Requirements: By law the EPA require that incidents are reported **as soon as practicable**. Should an environmental incident occur, the Contractor is requested to notification to the Employer's Representative and Irish Water as soon as possible **and in any event within 30 minutes** of the occurrence of an event that could give rise to an environmental incident, e.g., failure of plant and equipment, failure to operate and maintain plant or equipment, or failure to operate works in line with best practice. Within 4 hours of the initial notification, the Contractor is required to submit a preliminary incident report to the Employer's Representative as per the Environmental Incident Form at Appendix A of the parent Construction stage Environmental Management Plan.

4. PROJECT EMERGENCY NUMBERS

In the event of an environmental incident, the Contractor will ensure that the following actions will take place:

- The Employer's Representative must be immediately notified;
- If necessary, the Contractor will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.

Table 3-1 details the emergency contact number for the project (to be populated in the Daughter EIRP)

Table 3-1 – Environmental Objectives and Targets

Category	Emergency Contact	Name	Phone
Contractor	Project Manger	TBC	TBC
	Environmental Manager	TBC	TBC
	H&S Manager	TBC	TBC
Client	Employer's Representative	TBC	TBC
Regulatory Authorities (as applicable)	Cork County Council	TBC	TBC
	Environmental Protection Agency	TBC	TBC
	Fisheries Ireland	TBC	TBC
	National Parks and Wildlife Service	TBC	TBC
	Irish Water	TBC	TBC

5. RECORDS

The details of the incident will be recorded on an Environmental Incident Form (See Appendix A of the parent CEMP) which will provide information such as the cause, extent, actions and remedial measures employed in response to the incident. The form will also include any recommendations made to avoid reoccurrence of the incident. The form must be signed by the Environmental Manger.

A record of all environmental incidents will be kept on file by the Contractor. These records will be made available to the Employer's Representative and the relevant authorities such as NPWS, EPA if required.

6. TRAINING

The Contractor must establish an Environmental Training and Awareness Programme and ensure that all personnel receive adequate training prior to the commencement of the construction phase. The Contractor shall ensured that all personnel are aware of their individual environmental responsibilities and environmental constraints to specific jobs. No person should undertake work on site without first receiving environmental induction.

Training and awareness of personnel will continue throughout the construction phase and refresher training shall be provided as required

Signed records of environmental training shall be established and maintained and made available to the Employer's Representative.

7. EQUIPMENT

The Contractor's EIRP shall indicate a comprehensive list of emergency response equipment, including PPE, as appropriate, which will be provided at specified locations on the site.

APPENDIX D

Contractor's Traffic Management Plan

Fermoy Weir Remediation and Fish Bypass Channel

Parent Traffic Management Plan

June 2022

T.J. O'CONNOR & ASSOCIATES
CIVIL & STRUCTURAL CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
PH: 01 2952321, FAX: 01 2954541, EMAIL: TJOC@IOL.IE

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CONTENTS

1. INTRODUCTION

1.1. Background

Cork County Council propose to remediate the weir in Fermoy in compliance with its obligations as the owner of a protected structure. In order to ensure that the weir remediation does not act as a barrier to fish migration, Cork Co Co propose to construct a fish bypass channel in tandem with the weir remediation works.

1.2. Parent Traffic Management Plan

This Parent Traffic Management Plan (PTMP) has been developed to demonstrate how traffic management may be applied to the Works and therefore is indicative only. The successful Contractor will be required develop a Detailed Traffic Management Plan for submission to the relevant authorities.

No liability is accepted for the accuracy or completeness of the proposals outlined in this indicative traffic management plan.

This PTMP has been developed with regard to the Department of Transport's *Guidance for the Control and Management of Traffic at Road Works (2010).*

2. TRAFFIC SAFETY AND MANAGEMENT

2.1. Project Definition

The works proposed comprise the remediation of Fermoy weir, a protected structure, and the construction of a fish bypass channel on lands located on the north bank of the river Blackwater west of Fermoy Bridge.

These works will be constructed within the channel of the river Blackwater and on lands alongside the north bank of the river. The construction site will be principally accessed from the N72 at the north side of Fermoy Bridge. The works to the weir downstream (east) of Fermoy Bridge will be accessed through the Mill Island carpark from O'Neill Crowley Quay and Mill Road.

2.2. Required Plant

It is anticipated that the contractor will use similar main items of plant to the following during the works[1]:

- 360 degree excavators – 2.6 m wide x 7.5 m long
- 25T dumpers – 2.5 m wide x 9.5 m long
- 10T dumpers – 2.5 m wide x 4.6 m long
- Concrete delivery trucks
- Concrete pumps
- Delivery trucks – flatbed and containers
- Skips
- Vibratory rollers – 1.5 m wide x 2.8 m long
- Pneumatic rollers – 2.2 m wide x 5.3 m long
- Mobile Cranes may be required to set up on O'Neill Crowley Quay and on Ashe Quay in order to lift materials into position on the site

2.3. Traffic Management

Due to the size and type of plant that is likely to be required for the works, various traffic management measures will be required. Drawing 13049-TJOC-PL-XX-DR-C-2086 (Appendix A) outlines examples of traffic management measures that may be employed by the Contractor. These measures are described in the following sections.

2.3.1. Measure to Minimise Construction Vehicle Movements

- Consolidation of delivery loads to/from the site and manage large deliveries on site;

[1] These plant types and dimensions are indicative only and will need to be confirmed by the contractor in the Detailed Traffic Management Plan.

- Use of precast/prefabricated materials where possible;
- 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works.
- There will be limited construction staff parking on site. Therefore, construction staff vehicle movements will be minimal.

3. CONTRACTOR'S REQUIREMENTS

The purpose of the Construction Traffic Management Plan (CTMP) will be to ensure traffic management practices and necessary arrangements are in place throughout the construction period, to safeguard highway impact and the amenity of the area surrounding the site. The content of the final CTMP will be subject to the approval of Cork County Council (CCC).

3.1. Measures to be Included in the CTMP

The following measures will be included in the CTMP:

Construction Manager - There will be a designated Site Manager to deal with any complaints and enquiries from the general public and any other interested parties. Any changes to the designated Site Manager will be notified to DLRCC. The details of the Site Manager (including a 24-hour phone number) will be provided to DLRCC prior to commencing on-site. The Site Manager's details will also be advertised at the site entrance.

Sub-contractors - Individual subcontractors involved in activities such as waste removal will be required to incorporate the relevant requirements from the CTMP into their activities as well as statutory requirements. Any potential sub-contractors will be required to show how they will comply with the CTMP and how targets will be achieved and impacts minimised.

Dust and Dirt Control - The control of dust and dirt is a prime concern for all construction projects, particularly during periods of dry and windy weather. Best practice guidance, including 'Dust and Air Mitigation Measures' guidance provided by the Institute for Air Quality Management, will be utilised to control dust in accordance with the requirements of the Parent Construction Stage Environmental Management Plan.

A wheel cleaning procedure will be used in order to mitigate the amount of mud that could potentially be deposited on the surrounding road network by vehicles exiting the site. A power washer will be used as necessary to wash off any mud from the wheels of vehicles, with excess mud/slurry being collected and disposed of.

Pedestrian Safety Measures - Pedestrian safety throughout the construction programme will be paramount. To ensure pedestrian safety during loading and unloading activity, a traffic marshal will be present at site entrances and exits to minimise the likelihood of conflict with pedestrians. Warning signage will be provided locally to the site to ensure that vehicles, pedestrian and cyclists are aware that construction activity is taking place.

Site Induction - An induction specific to the development site shall be provided to all personnel before construction commences. This will incorporate health and safety; on-site construction works and issues and sensitivities in the context of the surrounding community particularly in relation to local schools and existing users of Fermoy Bridge, the Town Park, O'Neill Crowley Quay and Mill island Carpark.

Construction Travel Plan - The contractor will be asked as part of the contract to introduce a Travel Plan for its staff to limit the number of private car trips to the site.

The construction site will provide facilities to encourage sustainable travel such as drying areas, storage facilities and secure bike parking. Where staff are required to travel to site by car, they will be encouraged to do so outside the peak traffic hours.

Control of Deliveries - On a weekly basis, the Construction Manager will evaluate details of the daily profile of deliveries proposed for the upcoming week. Hauliers will be required to contact the site and indicate their delivery schedule for the following day. The proposed deliveries will be checked against the weekly delivery schedule. This will be overseen by the Site Manager to ensure that HGV deliveries are scheduled, ensuring that there is always space at the site to accommodate the necessary plant and deliveries.

Delivery and Servicing for the Site - All vehicles will be met by a site operative before being directed into a dedicated unloading area. All users associated with the site will be made aware of construction deliveries and appropriate safety measures will be put in place to ensure safety of staff and pedestrians. The Construction Manager will stagger the deliveries to minimise the impact on and off the site. A site operative will meet all deliveries on site prior to vehicles undertaking any manoeuvres.

Construction Vehicle Routes – Designated construction routes will be agreed with CCC and included in the final CTMP. This will seek to limit the impact of construction vehicles on unsuitable road links.

Use of the agreed vehicle routes will need to be followed by the main contractor and will be communicated to all individuals associated with the works. It is envisaged that this information will be communicated in the form of a leaflet or email and will include information with regard to times of operation, delivery routes, the call up procedure and delivery slot information. Any sub-contractor agreements will need to include adherence to the CTMP including the arrangements for vehicle routing and site access.

Recycling and Reuse – A policy will be employed on site to maximise the recycling and re-use of materials so that the amount of waste coming off site is minimised.

Public roads and Footpaths - Roads including footpaths, cycle tracks and other traffic routes are the responsibility of the Cork County Council.

The Contractor shall be responsible for obtaining all necessary permissions, licences, consents, permits and the like to facilitate the Works including permission for the location of mobile cranes on public roads and/or footpaths, if proposed for the delivery of materials or other activities associated with the works.

APPENDIX E

Preliminary Waste Management Plan

Fermoy Weir Remediation and Fish Bypass Channel

Parent Waste Management Plan

June 2022

T.J. O'CONNOR & ASSOCIATES
CIVIL & STRUCTURAL CONSULTING ENGINEERS
CORRIG HOUSE, CORRIG ROAD, SANDYFORD, DUBLIN 18
PH: 01 2952321, FAX: 01 2954541, EMAIL: TJOC@IOL.IE

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CONTENTS

1. INTRODUCTION

This Parent Waste Management Plan relates to the management and disposal of waste generated associated with the Fermoy Weir Remediation and Fish Bypass Channel and ancillary works. This Parent Waste Management Plan outlines the waste management framework and the key wastes that are likely to be generated on the project.

The Contractor is responsible for preparing the contract-specific Daughter Waste Management Plan. The plan must comply with this Parent plan and the Department of Environment, Heritage and Local Government 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' and will include the following (but not limited to):

- Specific/achievable waste management objectives;
- Analysis of waste arising; and
- Methods for proposed prevention, reuse and recycling of wastes.

2. WASTE HIERARCHY

Management of all waste throughout the project life-cycle will be in accordance with EU, National and Regional waste management policy and the principles of the Waste Hierarchy, i.e. prevention, minimization, reuse, recovery and recycling. In order to prevent and minimize the generation of wastes, the Contractor is required to ensure that raw materials are ordered in a timely manner so as the quantity delivered and the storage does not lead to the creation of unnecessary waste.

The management of material is key to implementing an effective waste prevention and minimization policy on site. Important considerations include:

- Prevention of Waste
    - Materials will be ordered as required to avoid over ordering.
    - Ensure correct storage and handling of construction material.
    - Inspection of delivered material to ensure none are damaged and can be used on site.
- Reuse of Waste
    - Where possible construction material will be reused on site/ off site.
- Recycling of Waste
    - Segregation of waste streams to be implemented on site.

3. STORAGE, TRANSPORT AND DISPOSAL

The Contractor will ensure as much as possible that all recyclable material will be separated at source. Individual waste streams will be segregated through the use of separate bins, storage containers or clearly defined areas for stockpiling. Reusable and recyclable waste streams will be stored separately to residual wastes to avoid contamination and maximize their reuse potential.

Hazardous material will be stored separately on site to avoid contamination. Waste will be stored appropriately as follows:

- Clearly marked signs;
- Enclosed to prevent waste escaping;
- Segregated by type where possible;
- Suitable for that waste type, i.e. able to contain waste and prevent escape, including leaking of liquids;
- Hazardous wastes must not be mixed. Any hazardous waste generated (e.g. oil rags or waste oil) will be stored in appropriate receptacles or containers or in bunded storage areas prior to their removal by an appropriately licensed contractor.

The materials to be disposed off-site are classified as 'wastes' and are subject to the provisions of the 'Waste Management Act' 1996 and amendments. Waste disposal will be to approved waste licensed landfill facilities or to licensed 'soil recovery' facilities.

The Contractor will ensure that:

- Any waste haulier employed is authorised by a waste collection permit;
- That any disposal or recovery facility to be used for the management of waste arising from the scheme is subject to an authorisation under the Waste Management Acts or other legislation;
- That the terms and conditions of these authorisations allow for the acceptance of the waste in question; and
- That these authorisations will not expire within the lifetime of the project.

4. WASTE MANAGEMENT FRAMEWORK

4.1. Responsibilities

The Contractor's Waste Manager will be responsible for ensuring that the Waste Management Plan is implemented. The Waste Manager may be the Environmental Manager or other suitability experienced personnel. They shall be assigned the responsibility for waste minimization, reuse and recycling during all stages of this project.

All site personnel have a responsibility to work towards the plan set out in the waste management plan.

4.2. Training

The Waste Management Plan will be made available to all personnel on site. The Waste Management Plan and its objectives will be included in site induction for all staff members. Site induction will include instructions on how to comply with source segregations and material reuse.

Site notices will be positioned throughout the site to reinforce the Waste Management Plan.

4.3. Records

A record will be maintained of all waste removed from the site (Waste Removal Record Form - see Appendix A of the Parent CEMP). The record will include information on the date removed, EWC Code, description of area where waste, weight and volume, details of whether the waste in question was being removed for either disposal or recovery/recycling, waste transport contractor (including license or permit number), details of the facility to which waste is removed (including license or permit number).

A monthly summary including quantity, type and composition of all waste removed from site will be prepared by the Contractor.

A location will be identified where all records in regard to waste transport, recycling, disposal will be held for inspection by the Employer's Representative or other third parties.

4.4. Inspections

The Contractor's Environmental Manager will carry out weekly inspections of the site which will include examining how the waste is segregated. The weekly inspections will be documented on the Weekly Environmental Inspection Record Sheet (see Parent CSEMP)).

4.5. Audits

Waste management will be audited as part of the auditing for the overall CSEMP. Internal audits by the Contractor will be completed at a minimum of twice per year. Upon completions of the audit attention will be given to opportunities for reducing waste. Audit findings will highlight corrective actions that may be taken in relation to management policies or site practices in order to bring about further waste reductions.

All waste records (Waste Record Sheet, waste transfer notes etc.) will be audited externally by the Employer's Representative during the External Audit of the CEMP.

5. WASTE GENERATION

5.1. Identification and Segregation of Waste

Wastes generated must be identified and segregated according to their category as described by the European Waste Catalogue (EWC). The potential waste categories include but are not limited to the wastes detailed in the following sections.

5.1.1. Concrete, Bricks, tiles, ceramics (17 01)

Waste concrete is likely to arise during the construction phase. Where possible concrete will be returned to the supplier for reuse. In circumstances where this is not possible the concrete may be disposed off-site.

It's unlikely to have waste bricks, tiles or ceramic during the construction phase of this project. Unless they are found in excavated soil. However, careful storage is required to reduce the amount of breakages and waste being created. Offcuts/ trimmings will be re-used where possible. Any waste generated will be stored in containers to removal to a waste facility.

5.1.2. Wood, Glass and plastic (17 02)

Timber waste will be stored separately and re-used where possible. Remaining un-used timber will be disposed of at a recycling facility. Pallets will be returned to the supplier for reuse. A covered container for waste wood will be placed on site in convenient locations (Timber will not be allowed to rot.).

5.1.3. Bituminous mixtures, coal tar and tarred products (17 03)

Waste bituminous material may arise during trenching works on existing roads.

5.1.4. Metals (including their alloys) (17 04)

Metal waste can have a significant scrap value. Metals will be segregated on site for reuse and recycling.

5.1.5. Soil (including excavated soil from contaminated sites), stones and dredged spoil (17 05)

Soils excavated which cannot be reused on site will have to be disposed of offsite.

5.1.6. Insulation materials and asbestos-containing construction materials (17 06)

In the event that asbestos waste is encountered on-site appropriate storage, transportation and disposal of waste must be adhered to.

5.1.7. Packaging and Plastics (Various)

Packaging waste will be segregated at source and removed to a recycling facility. Waste packaging will be stored in separate covered containers.

5.1.8. Other wastes

Other wastes other than those listed above are usually non-recyclable. This material will be stored in a designated covered container for removal to a licensed facility for disposal.

5.2. Hazardous Material

In the unlikely event that hazardous waste is encountered appropriate storage, transportation and disposal of waste must be adhered to. A suitable qualified person will classify the material in accordance with European Waste Catalogue (EWC) and the Hazardous List. If non-hazardous waste becomes contaminated with hazardous waste the entire load will be considered hazardous.

The Contractor will ensure that appropriate measures are taken to safeguard the health of the Contractor's operatives and the general public for the duration of the works. In the event that hazardous materials are discovered on the site, the ER is to be informed immediately. The ER has the right to request that tests be carried out on any suspected hazardous materials to determine their exact nature.

Under certain circumstances, specialist contractors may be required to remove the hazardous materials from site, e.g. asbestos. The Contractor will seek the approval of the Employer's Representative where the services of a Specialist Contractor are to be engaged. The Contractor will ensure that the Specialist Subcontractor, if any, will comply with all relative legislation regarding the required permits and licensing for the disposal of hazardous materials.

Hazardous materials arising from site clearance and/or excavations will be disposed of only at suitable licensed facilities.

The contractor shall provide details of the health and safety requirements to be implemented during the removal of hazardous materials such as asbestos. This will include a PPE protocol.

APPENDIX F

PCEMP Contact List

Table F1 – Employer Contact Data

Name	Designation	Email	Phone	
			Landline	Mobile
TBC				
TBC				

Table F2 – Employer's Representative Contact Data

Name	Designation	Email	Phone	
			Landline	Mobile
Diarmuid Cahalane	Project Director	dcahalane@tjoc.ie	01 295 2321	-
Michael Vaughan	Project Engineer	mvaughan@tjoc.ie	01 295 2321	-
xxx	Ecological Clerk of Works	TBC	TBC	TBC