



Ringsend Wastewater Treatment Plant Upgrade Project

OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Regional Biosolids Storage Facility Component

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SECTION 1: INTRODUCTION

1.1 Purpose

The purpose of the Outline Construction Environmental Management Plan (CEMP) is to provide a framework to ensure that the Project’s environmental impacts and risks identified during the EIA and AA processes are effectively managed during construction, commissioning and handover of the project, and that appropriate mitigation, monitoring, inspection and reporting mechanisms are implemented.

The project will be undertaken through multiple contracts of significantly varying scope and durations and which will be carried out over an extended period of time.

This Outline CEMP is produced as part of the planning application. It is intended that this framework will be expanded and updated to include more site specific information, planning conditions etc, once planning permission has been granted.

The outline CEMP will provide a framework to:

- Formalise and disclose the programme for environmental management;
- Provide a framework for the implementation of environmental mitigation measures identified in the EIAR and planning conditions;
- Present guiding principles and generic measures for the detailed development of contract specific CEMP which will include detailed method statements;
- Provide mitigation measures and environmental controls and ensure compliance with the Board planning consent; and
- Specify roles and responsibilities for implementing the CEMP.
- Describe the communication and reporting procedures

This document should not be considered a detailed construction method statement; this will be progressed by the contractors (in association with Irish Water), appointed to undertake the individual works, prior to commencement of the works.

Best practice principles require that every reasonable effort be made to reduce and preferably to prevent negative impacts, while enhancing positive impacts/benefits. These principles have guided the EIA process and potential negative impacts have been avoided through careful design and location of infrastructure and the identification of measures to ensure the avoidance of impacts. The environmental objectives of the project are summarised in Table 1-1.

Table 1-1: Environmental Objectives and Targets for the Upgrade Project

Objective /Principal	Description
Ensure construction activities are carried out in accordance with the Conditions of Consent.	Prepare a contract specific CEMP prior to commencement of construction contracts that reflects all environmental constraints and risks identified in the EIAR and sets out all mitigation measures identified in same and additional appropriate mitigation measures as may be necessary.
	Review and update the CEMP as 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 contract specific 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.
	Minimise the risk of pollution by ensuring all mitigation measures are implemented and effective.

Objective /Principal	Description
	<p>Construction activities are undertaken in accordance with national/international legislation.</p> <p>Effective waste management techniques are adopted on site as per Waste Management Plan.</p> <p>Develop and maintain an Environmental Incident Response Procedure and ensure adequate spill response. Spill kits are available on site.</p>
<p>Construction work is carried out with minimal disturbance to landowners and the local community.</p>	<p>Minimise potential for noise and vibration, traffic and dust impacts by ensuring all mitigation measures are implemented and plans are adhered to.</p> <p>Minimise disruption to local road users through effective management of traffic and construction related haulage in line with contract specific Traffic Management Plan.</p> <p>Keep sites clean and tidy at all times.</p> <p>Respond to any local concerns regarding construction activities.</p> <p>Report on environmental performance of construction activities.</p>
<p>Construction work is carried out with minimal impact on archaeology.</p>	<p>All features of archaeological interest to be treated in accordance with the defined mitigation measures.</p>
<p>Adopt a sustainable approach to construction.</p>	<p>Minimise use of natural resources and source materials locally where possible.</p> <p>Minimise resource wastage and reuse materials where possible.</p> <p>Ensure a policy of reuse and recycling is adopted on the project.</p> <p>Ensure energy efficiency is considered when operating plant and machinery and running site offices and compounds.</p>
<p>Provide adequate environmental awareness for all project personnel</p>	<p>Ensure all personnel are aware of their environmental responsibilities and undergo induction training appropriate to their needs, prior to commencement of construction. Training and awareness of personnel will continue throughout the construction phase through provision of Tool Box talks or equivalent. Provide environmental training /talks on environmental issues associated with particular sensitive locations, construction activities and environmental best practice where required.</p> <p>Appropriate environmental signage will be erected on site where required. Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) at the entrance and, where appropriate, at the boundaries of the site.</p>

1.2 Contract Specific CEMP(s)

More detailed contract specific CEMP(s) will be prepared on award of the various project contracts.

The RBSF component will comprise one or at most two contracts.

Contract specific CEMPs will be drafted for each specific contract or package of works as required. The contract specific CEMP shall be a specific, targeted, and 'stand-alone' plan to ensure that all of the mitigation measures, obligations, requirements and constraints identified in the EIA, AA and planning conditions are fully implemented under each specific contract in accordance with the Project Approval. The contract specific CEMP(s) shall cross-reference the Outline CEMP and individual Employer's Requirements as necessary. The CEMP will be provided to the relevant local authority for consultation and approval (or as outlined in the planning conditions).

The Contractor shall prepare a CEMP which shall include, as a minimum, the following:

- Management Structure for Construction and Operation Phases;
- Resources – roles and responsibilities;
- Training;
- Construction Activities and Sequencing;
- Method statements;

- Communications;
- Management of Sub Contractors;
- Monitoring;
- Inspections and Auditing;
- Reporting;
- Corrective and Preventative Action Procedures;
- Procedures for Review and Improvement; and
- Records.

The CEMP shall, as appropriate also include the following sub plans:

- Construction Compound Management Plan;
- Traffic Management Plan;
- Noise and Vibration Management Plan;
- Water Quality Management Plan;
- Dust Management Plan;
- Odour Management Plan;
- Construction and Demolition Waste Management Plan;
- Invasive Species Management Plan; and
- Emergency Incident Response Plan.

The CEMP(s) are necessarily “live” documents which will be revised regularly. It is expected that amendments to the CEMP(s) will be necessary to reflect inter alia 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.

SECTION 2: PROJECT BACKGROUND

The Ringsend wastewater treatment plant has been providing wastewater treatment to the city of Dublin since 1906.

The Lower Liffey and Tolka Estuaries were first designated as ‘sensitive’ areas under the Urban Waste Water Treatment Directive in 2001 thus requiring that nutrients be removed from the WwTP’s final effluent before discharge into the Lower Liffey Estuary. The plant is operating over its design capacity and needs to be upgraded to ensure that the Greater Dublin Area has appropriate wastewater treatment to enable continued social and economic development. Upgrading the current capacity at Ringsend and the proposed development of the Greater Dublin Drainage plant at Clonshaugh will help to meet the infrastructural requirements to treat the amount of wastewater that will be generated as the population continues to grow and the industrial needs of the area continue to expand.

The National Wastewater Sludge Management Plan (NWSMP), published in 2016, set out Irish Water’s strategy for managing wastewater sludge over the next 25 years. The development of regional facilities for the storage of biosolids from wastewater treatment plants is recommended in the NWSMP. In line with the adopted strategy, a new Regional Biosolids Storage Facility (RBSF) is proposed as part of the Upgrade Project. The purpose of the RBSF is to store treated biosolids that will be produced at the Ringsend WwTP and the Greater Dublin Drainage Project [GDD] wastewater plant.

2.1 Existing Approved Development

On 9 November 2012, An Bord Pleanála (ABP) granted approval to Dublin City Council for the upgrade to Ringsend Wastewater Treatment Plant (ABP Reference Number: 29N.YA0010).

The proposed extension to Ringsend Wastewater Treatment Plant (WwTP) sought to expand the existing plant at Pigeon House Road, Ringsend, Dublin to a capacity of 2.4 million population equivalent (PE). The proposed extension included the following elements of works:

- Additional secondary wastewater treatment capacity at the wastewater treatment works site (approximately 400,000 population equivalent) including associated solids handling and ancillary works.
- Various WwTP process improvement works, known as ‘surgical works’.
- A 9 kilometre Long Sea Outfall Tunnel (LSOT), commencing at an onshore inlet shaft approximately 350 metres east of the wastewater treatment works and terminating in an underwater outlet riser/diffuser in Dublin Bay.
- Road network and access improvements in the vicinity of the site.

Two applications were made to amend the terms of the development granted in 2012 and were approved by ABP under section 146B of the Planning and Development [Strategic Infrastructure] Act 2006. The approved amendments were as follows:

- Provision of a temporary access to the WwTP site on the north boundary of the site along Pigeon House Road and the provision of an internal circulation road and adjustment of the site boundary fence in the south east corner of the site (ABP Reference Number 29N.YM00020, June 2016).
- Use of different construction compounds to those approved in 2012 (ABP Ref 29N.YM0004, January 2018).

These development works are referred to as the “**2012 Approval**”. Some elements of these works have been advanced as follows:

- Various LSOT preparatory works including road improvements, tunnel boring machine power supply cable laying.
- Some surgical works have been completed while others are in progress.
- Construction of access road to the South East of the WwTP.
- Construction of additional secondary wastewater treatment capacity (in progress).

2.2 Proposed Development

The proposed development for which permission is now being sought from ABP, pursuant to Section 37A of the Planning & Development Act 2000, as amended, comprises of the following two principal components: -

- **Ringsend WwTP Component:** Upgrade Works at the Ringsend WwTP; and,
- **RBSF Component:** A Regional Biosolids Storage Facility at Newtown, North Road, Dublin 11.

2.2.1 Ringsend WwTP

The upgrade works at the Ringsend WwTP proposed to be carried out comprises:

- Omission of elements of the development works previously approved by ABP; and
- Additional development works in the upgrade of the WwTP.

There are also elements of the development works previously approved by ABP which are included in the scope of the Environmental Impact Assessment but are not included in the current planning application to ABP. The 2012 Approval and the development for which permission is now being sought are collectively referred to, in the context of this EIAR, as the “**Proposed Upgrade Project**”.

The 9 kilometre Long Sea Outfall Tunnel and associated onshore inlet shaft and construction compound are now proposed to be omitted from the 2012 Approval. This omission arises from the availability of a new technology which will facilitate the expansion of the existing wastewater treatment plant within the confines of its current site. This will now be achieved primarily through the introduction of aerobic granular sludge technology (AGS) throughout the WwTP.

The following additional development works are now proposed at the Ringsend WwTP:

- Reconfiguration and retrofitting of the existing sequence batch reactors (SBR) to facilitate the use of AGS technology.
- Associated works including provision of:
 - Phosphorous Recovery Building
 - Sludge Pasteurisation Building
 - Treated effluent emergency/maintenance by-pass culvert
 - Vehicular entrance and access road off Pigeon House Road
 - Ancillary site development and landscape works

It is also proposed to include two construction compounds, previously approved in January 2018 (ABP Ref 29N.YM0004) as part of the Upgrade Project, thereby extending the duration of their approved temporary use from 3 years to 10 years.

2.2.2 RBSF

The National Wastewater Sludge Management Plan (NWSMP), published in 2016, set out Irish Water’s strategy for managing wastewater sludge over the next 25 years. The development of regional facilities for the storage of biosolids from wastewater treatment plants is recommended in the NWSMP. In line with the adopted strategy, a new Regional Biosolids Storage Facility (RBSF) is proposed as part of the Upgrade Project. The purpose of the RBSF is to store treated biosolids that will be produced at the Ringsend WwTP and the Greater Dublin Drainage Project [GDD] wastewater plant.

The proposed development of the RBSF is at an 11 Ha site at Newtown, Dublin 11 and will include the following elements:

- 2 no. biosolids storage buildings (50m x 105m), including solar panels on the roof of one building;
- Administration and welfare building
- Additional ancillary buildings
- Site services infrastructure, landscaping and site boundary treatment
- Use of the already existing vehicular access off the R135 regional road

2.2.3 Scope of EIAR

The EIAR submitted with the Planning Application was tasked with considering the impact of the overall Ringsend WwTP Upgrade Project and not simply the works for which permission is now being sought at Ringsend. The Assessment of the Ringsend and RBSF components were addressed in separate volumes.

SECTION 3: ENVIRONMENTAL MANAGEMENT FRAMEWORK

3.1 Employer

Irish Water 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.

3.2 Employers Representative

Irish Water 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.

3.3 The Contractor

The Contractor(s) 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.

3.4 Contractors Environmental Manager

An Environmental Manager will be appointed **by the Contractor** to ensure that the approved Contract specific CEMP 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:

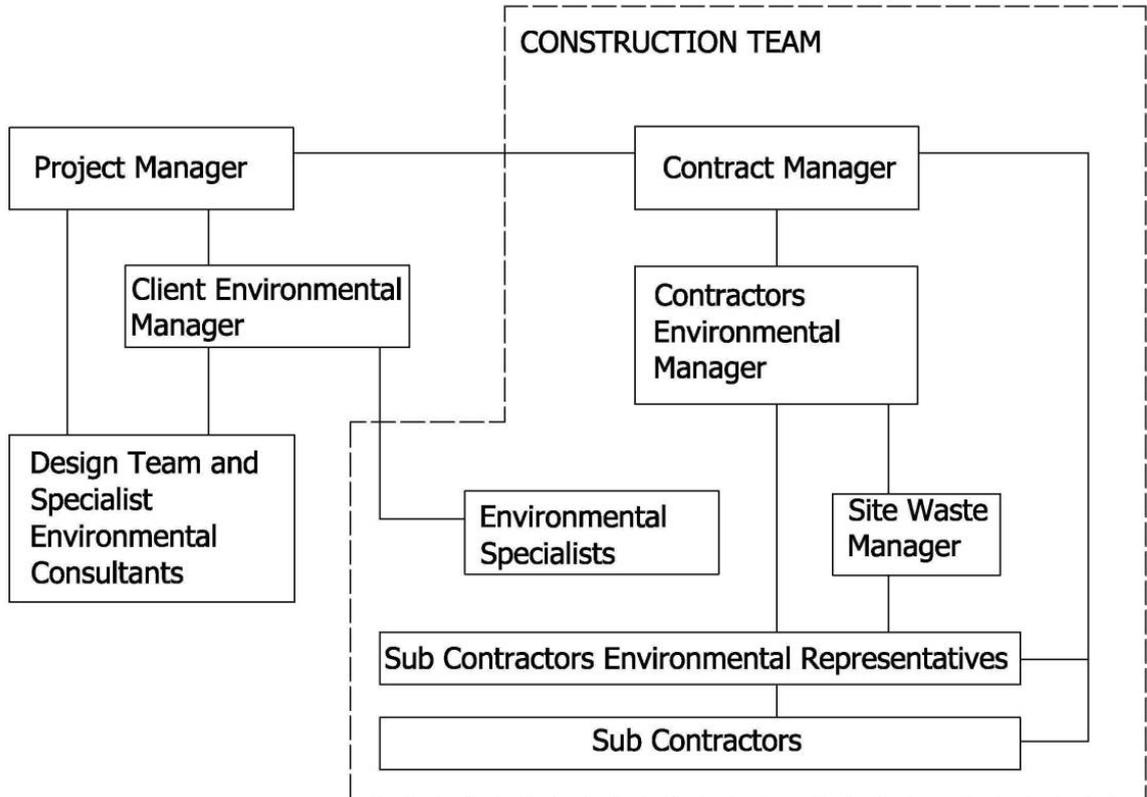
- Preparing, maintaining and ensuring implementation of the CEMP;
- Establishing, implementing, and maintaining the Environmental Management System in line with ISO 14001;
- Conducting regular environmental inspections and audits as per the frequency specified in the Contract and checking adherence to the mitigation measures of the CEMP;
- 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 monthly 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 monthly 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 ABP permission and EIAR as well as with baseline data gathered during Environmental Impact Assessment;
- Ensuring all personnel have adequate environmental training (including subcontractors);
- Dealing with environmental complaints; and
- Managing and responding to environmental incidents and ensuring that all incidents are reported.

3.5 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 (i.e. depending on the scope of the contract):

- Archaeology
- Ecology

- Ecology – Invasive Species
- Air Quality
- Noise
- Vibration
- Dust
- Waste



3.6 Contacts

An emergency contact list will be generated and made available to all project personnel and included in the Contract CEMP. The Contact List shall be displayed prominently in the Contractor’s and Employer’s Site facilities as well as at suitable locations where construction activity is being carried out. The contact list will include key environmental representatives that may need to be contacted in the event of an incident.

SECTION 4: ENVIRONMENTAL MANAGEMENT PROCEDURES

4.1 Training

The Contractor (in association with IW) must ensure that an Environmental Training and Awareness Programme will be established and that all personnel and subcontractors 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.

4.2 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, Irish Water and/or the Employer's Representative will arrange for regular meetings (every three months) to be attended by:

- Irish Water
- The Employer's Representative
- Contractor(s)
- Contractor(s) Environmental Manager(s)
- Environmental Specialists – engaged by either the Client or the Contractor(s)

These meetings will be held at the RBSF site Office.

4.3 Environmental Management – Contract Meetings

The Contractor's Environmental Manager will hold monthly meetings and site walk overs with the ER (including such other statutory/regulatory bodies as the ER advises/requires). The Environmental Manager will create a schedule for the monthly meetings, which should take place 2 weeks after the monthly inspection. The agenda for the meetings shall include the following items:

- Outcome of environmental inspections and/ or audits;
- Summary of Corrective Action Reports and any outstanding actions; and
- Non-compliances shown by environmental monitoring results.

The Environmental Manager will provide minutes of the monthly meeting and distribute them to all attendees.

4.4 External Communications

Irish Water will have in place a public communications management plan. Where communications are related to environmental issues the Contractor's Environmental Manager will be informed and consulted, as appropriate.

4.5 Monitoring, Inspections and Audits

4.5.1 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.

4.5.2 Inspections

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.

Once a month the weekly inspection will include a review of environmental documentation and records. The monthly inspection will be recorded and reported to the ER within five days of the inspection taking place.

4.5.3 Audits

Irish Water will arrange for third party independent Environmental audits to be carried out. In addition, regulatory bodies such as DCHG, DHPLG 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 contractor. The Contractor's Environmental Manager will establish an Internal Audit and inspection calendar.

Audits will be scheduled on the basis of status and importance of the activities and at an expected frequency of at least once every three months.

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 CAR to describe and record the findings.

The Verification of previous Corrective Action Reports (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.

4.6 Environmental Incident Response and Investigations

As part of the Contract specific CEMP the Contractor shall develop a contract specific EIRP (Emergency Incident Response Plan). Application of the procedures therein will be the responsibility of the Contractor.

The EIRP is a written procedure to deal with incidents 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 the 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;
- 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.
- 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.

4.7 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 relevant CEMP(s) are updated accordingly.

4.7.1 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 CAR will detail the results of the investigation, any corrective and preventative actions required. The CAR 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.

4.8 Reporting

4.8.1 Environmental Compliance Report

The Contractors shall submit a monthly Environmental Compliance Report to the ER for review and approval in digital (word and pdf) and hardcopy. The contents of the Contractor's Environmental Compliance Report shall include 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).

4.8.2 Incident Investigation Reports

The Contractor shall inform the ER 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).

4.9 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 shall maintain the following environmental records (as a minimum) which shall 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.

SECTION 5: ENVIRONMENTAL MANAGEMENT MEASURES - GENERAL

It is anticipated that there will be a number of contracts to cover all the elements of the project. Each of the Contract specific CEMPs will have a list of environmental mitigation measures appropriate to the works being undertaken. This list will be generated from the lists contained in the outline CEMP. The Contract specific CEMP will detail how these will be implemented. In some contracts, there will be specific plans required to deal with certain aspects such as Waste, Traffic, Landscape, Invasive Species, Noise and Vibration, Dust etc.

The following tables contain a summary of the environmental management measures that are required to be implemented during the design, mobilisation, construction, commissioning, demobilisation and operational/maintenance phase of the works to be undertaken in relation to the proposed development.

The mitigation commitments contained in the 2018 EIAR are included and these will be augmented by any conditions that will be imposed by ABP in relation to current application. All of the requirements shall be considered as a minimum standard to be achieved.

Table 5-1. lists the general construction management measures that will be required for all potential contacts and they reflect best practice in environmental management incorporating the guidelines above.

Table 5-1: General Construction Management Measures

Topic	Management Measure
Construction Impacts General CEMP	<p>A contract specific Outline Construction Environmental Management Plan (CEMP) has been prepared by IW. Detailed CEMPs will be developed for individual contracts and implemented by the various Contractors</p> <p>The individual CEMPs will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, <i>Environmental Good Practice on Site</i>, CIRIA 2005, as well as the Outline CEMP document. The CEMPs shall have individual project specific Management Plans appended relating to Waste Management, Invasive Species Management, Traffic Management, Monitoring Plans, and Environmental Incident Response Plans.</p> <p>Any planning conditions imposed by the planning authority shall be strictly observed and monitoring requirements shall be observed as conditioned.</p>
Guidance Documents	<ul style="list-style-type: none"> Measures set out in the Construction Industry Research and Information Association (CIRIA) on Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors Volume 532 shall be adhered to by the Contractor The Guidelines entitled "Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites" prepared by the Eastern Regional Fisheries Board shall be adhered to in full by the Contractor.
Environmental Incident Response Plan	<p>A contract specific Environmental Incident Response Plan shall be prepared by the Contractor and shall include an emergency work procedure to deal with any accidental/emergency spills of hazardous substances (oils, hydraulic fluids, concrete/cement etc.). This will be submitted to the ER for approval.</p>
Contact Details	<p>Details of site managers, contact numbers (including out of hours) and public information signs (including warning signs) at the entrance and, where appropriate, at the boundaries of the site.</p>
Fuel / Chemical Handling	<ul style="list-style-type: none"> All potentially harmful substances will be stored in compliance with the handling instruction, including separation of incompatible chemicals, provision of adequate firefighting, spill containment and other safety facilities. The Contractor will ensure that adequate means (Spill Kits) to absorb or contain any spillages of these chemicals are available on site at all times. 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. Any handling of hazardous chemicals shall be in compliance with the relevant safety instructions and legislation (Safety, Health and Welfare at Work Act 2005 (S.I. No. 10 of 2005) and the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001 (S.I. No. 619 of 2001) and the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No 299 of 2007) and amendments). A Safety Data Sheet will be available, as well as an assessment of the hazards associated with the chemical (to personnel, for storage, for emergency response).
Fuel / Chemical	<ul style="list-style-type: none"> All fuels or chemicals substances (e.g. oils, diesel, herbicides, pesticides, concrete etc) kept on the construction site shall be stored in bunded containers in specified hard standing bunded areas with the provision of a storage/retention capacity of 110% of tank storage.

Topic	Management Measure
Handling	<ul style="list-style-type: none"> ▪ No refuelling or maintenance of vehicles and equipment shall be carried out within 20 metres of, the boundary of South Dublin Bay SAC or South Dublin Bay and River Tolka Estuary SPA or within 20 metres of any water course
Water Discharge General	Where the Contractor proposes discharging effluent (including groundwater) from the site to waters or to a sewer under the Local Government (Water Pollution) Acts and Regulations 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.
Discharge to waters	Any discharges arising from the construction phase shall incorporate silt removal and hydrocarbon removal using a hydrocarbon interceptor (which will comply with current European Standard EN858).
Sewage Management	<p>Foul sewage shall be removed off site and disposed of by discharging to a licensed sewer network by the Contractor.</p> <p>Any discharges arising from the construction phase of the proposed scheme entering the foul/storm sewer network will be in accordance with the requirements of a discharge licence (if required) granted by Fingal County Council.</p>
Cement Washout	Designated impermeable cement washout areas must be provided;.
Stockpiles	Any excavated vegetation, soil and subsoil will be temporarily stockpiled away at least 20 m from any surface water features in order to reduce the likelihood of any suspended solids reaching them;
Pest Control	A Pest Control Plan for the construction phase shall be completed and included in the Contract specific CEMP written by the Contractor.

SECTION 6: ENVIRONMENTAL MANAGEMENT MEASURES – RBSF ELEMENT

The general construction management measures listed in Table 5-1 Section 5 will also apply to this component.

6.1 Population and Human Health - RBSF Component

This section includes the measures that are required to protect human beings and material assets during the design and the execution of the project. The CSEMP shall detail all measures (including method statements) to be employed in relation to all potential impacts on human beings and material assets; and how the following mitigation measures will be implemented.

Table 6-1: Population and Human Health Management Measures - RBSF

Topic	Management Measure
Human Health	It is recommended that a rodent and pest control plan is put in place so as to manage and limit any potential disturbance to populations that may utilise the site. The pest control plan should be in accordance with the Chartered Institute of Environmental Health's " <i>Pest minimisation Best practice for the construction industry</i> " guidelines or a similar appropriate standard.

6.2 Water Management – RBSF Component.

This section includes the measures that are required to protect surface water and groundwater during the design and execution of the project. The Contract specific CEMP shall detail all measures to be employed in relation to all potential impacts on water quality and how the following mitigation measures will be implemented.

Table 6-2: Water Management Measures - RBSF

Topic	Management Measure
Drainage System	Design to incorporate Sustainable Urban Drainage Systems [SuDS] techniques (stormwater attenuation and Hydrocarbon interceptors) and to be compliant with recommendations of the Greater Dublin Strategic Drainage Study [GSDSDS] and Fingal County Council.
Flood Risk Construction	<ul style="list-style-type: none"> The attenuation storage will be established and the required outlet control to attenuate the discharge flow will be constructed as early as possible in the construction stage. Runoff from all impermeable areas formed for the RBSF during the construction stage will be directed through the storm water storage and attenuated to the greenfield runoff rate.
Protection of Fisheries	The guidelines provided by the Inland Fisheries Ireland (2016) on the protection of fisheries habitats during construction projects will be adhered to.
Control of Water Pollution	Foul drainage from all site facilities will be to a public sewer (pumped) or contained and disposed of at a licensed facility offsite.
Control of Water Pollution	Within the site boundary fence, temporary earth bunds will be constructed to contain surface water run-off and channel it to a silt trap or settlement pond before discharge to the drainage network.
Control of Water Pollution	<p>When cast in-place concrete is required, all work must be done in the dry and effectively isolated from any flowing water (or water that may enter rivers or streams) for a period sufficient to ensure no leachate from the concrete.</p> <p>No direct discharges to be made to waters where there is potential for cement or other contaminant residues in discharges.</p> <p>Designated impermeable cement washout areas must be provided.</p>
Control of Water Pollution	Any excavated vegetation, soil and subsoil will be temporarily stockpiled away at least 20 m from any surface water features in order to reduce the likelihood of any suspended solids reaching them.
Control of Firewater Runoff (operational)	A shut off valve will be installed on the outlet to the stream. This will be used to contain any contaminated runoff in the event of a major accident on site. In the event of a fire, the shutoff valve will close and the firewater will be contained in the attenuation storage system.

6.3 Terrestrial Biodiversity Management – RBSF Component

This section includes the measures that are required to protect terrestrial ecology during the execution of the project. The contract specific CEMP shall detail all measures to be employed in relation to all potential impacts on terrestrial ecology and how the following measures will be implemented. An Outline Invasive Species Management Plan has been drafted by IW for the management of ongoing contracts. No Japanese Knotweed has been identified in the areas where Contracts relating to the current application will be undertaken.

Table 6-3: Terrestrial Biodiversity Management Measures - Ringsend

Topic	Management Measure
Site Clearance/ Breeding birds and Badger protection.	No vegetation will be cleared during the breeding season between 01 March and 31 August. If a breeding bird survey prior to construction shows that there are no nesting species within the construction area, then this mitigation measure will not be required. Given the observed badger usage of the site for foraging there will be a confirmatory survey for badgers prior to construction as they could establish in the construction area in the intervening period. General biosecurity measures will be implemented to ensure invasive species are not imported to site.
Loss of foraging for bats	An area of existing grassland in the northern part of the site will be planted with native deciduous trees to form an additional foraging area for bats
Surface Water Discharge	See mitigation measures outlined in the Table 6-2.
Lighting	During the operational phase, lighting from the proposed storage facility should be screened by planting on the berm to the north of the buildings and any floodlighting should be directed downwards so that the beam spread does not cover the proposed woodland planting.

6.4 Noise and Vibration Management – Ringsend Component

This section includes the measures that are required to mitigate noise and vibration during the design and execution of the project.

The Contractor will compile a Noise and Vibration Management Plan (NVMP) which will deal specifically with management processes and strategic mitigation measures to remove or reduce significant noise and vibration impacts, and cumulative noise and vibration impacts from the construction works. The purpose of the NVMP is to ensure that the potential impacts from noise emissions are mitigated to avoid disturbance to the local community and wildlife. The purpose of the noise management programme is to ensure that the potential impacts from noise emissions are mitigated to avoid disturbance to the local community and wildlife.

Noise monitoring will determine the noise levels occurring at the nearest sensitive receptor due to site operations and to ensure they are kept within acceptable limits, by taking corrective action if necessary. Mitigation and monitoring will also ensure that the works are undertaken in a manner that does not give rise to significant negative impacts through minimising noise annoyance, noise disturbance or noise nuisance at noise sensitive receptors in the vicinity of the construction areas.

Table 6-4: Noise and Vibration Management Measures - RBSF

Topic	Management Measure
Noise and Vibration Management	Contractor will compile and implement a Noise and Vibration Management Plan (NVMP) which will address <ul style="list-style-type: none"> ▪ management processes and strategic mitigation measures to remove or reduce significant noise and vibration impacts, and cumulative noise and vibration impacts from the construction works. ▪ noise and vibration monitoring and reporting. ▪ method statements for each phase of the works, the associated specific measures to minimise noise and vibration in so far as is reasonably practicable for the specific works covered by each plan and a detailed appraisal of the resultant construction noise and vibration generated.

Topic	Management Measure														
Construction phase mitigation measures	<p>During the construction phase, the proposal development shall comply with British Standard 5228 “Noise Control on Construction and open sites Part 1. Code of practice for basic information and procedures for noise control.”</p> <p>The BS5228 standards include guidance on several aspects of construction site mitigation measures, including, but not limited to:</p> <ul style="list-style-type: none"> ▪ selection of quiet and or low vibration emitting plant; ▪ control of noise sources; ▪ screening; ▪ hours of work; ▪ liaison with the public; and ▪ monitoring. 														
Construction Noise limit at Sensitive Receptors (Construction Stage)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Period</th> <th colspan="2">Allowable Limit at Nearest Sensitive Receptor (dB L_{Aeq}) Operational Construction Stage</th> </tr> </thead> <tbody> <tr> <td>Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)</td> <td colspan="2" style="text-align: center;">70 dB L_{Aeq,1hr},</td> </tr> <tr> <td>Evening (19:00 to 23:00hrs)</td> <td colspan="2" style="text-align: center;">65 dB L_{Aeq,1hr},</td> </tr> <tr> <td>Night time (23:00 to 07:00hrs)</td> <td colspan="2" style="text-align: center;">55 dB L_{Aeq,1hr},</td> </tr> </tbody> </table>			Period	Allowable Limit at Nearest Sensitive Receptor (dB L _{Aeq}) Operational Construction Stage		Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	70 dB L _{Aeq,1hr} ,		Evening (19:00 to 23:00hrs)	65 dB L _{Aeq,1hr} ,		Night time (23:00 to 07:00hrs)	55 dB L _{Aeq,1hr} ,	
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Operations	<p>Noise from building services plant will be minimised through the selection of “low noise” equipment where required as well as the incorporation of appropriate attenuation in the form of:</p> <ul style="list-style-type: none"> ▪ Acoustic enclosures for fans; ▪ Provision of attenuators for fan intake’s; and ▪ Use of acoustic rated doors on all plant rooms or enclosures. <p>The following mitigation measures will be taken to reduce noise levels arising from the vehicular activity in and around the site:</p> <ul style="list-style-type: none"> ▪ The design of the site is such that the need for reversing should be minimised in open areas and drivers will be required to adhere to onsite traffic management to reduce the use of reverse sirens. ▪ A speed limit of 20 km/h shall be applicable to all vehicles traversing the site. ▪ Vehicles shall not be permitted to loiter on or near the south-eastern corner of the site. ▪ Under no circumstances are air brakes to be used by vehicles onsite. <p>Vehicle horns should not be sounded whilst onsite, except in the event of an emergency.</p>														
Vibration Limits.	<p>Construction activities will be required to comply with the following vibration limits, measured at the nearest noise sensitive receptor:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th colspan="3" style="text-align: center;">Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property (soundly constructed buildings) to the source of vibration, at a frequency of</th> </tr> <tr> <th style="width: 33%;">Less than 10 Hz</th> <th style="width: 33%;">10 to 50 Hz</th> <th style="width: 33%;">50 to 100 Hz (and above)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">15 mm/s</td> <td style="text-align: center;">20 mm/s</td> <td style="text-align: center;">50 mm/s</td> </tr> </tbody> </table>			Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property (soundly constructed buildings) to the source of vibration, at a frequency of			Less than 10 Hz	10 to 50 Hz	50 to 100 Hz (and above)	15 mm/s	20 mm/s	50 mm/s			
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15 mm/s	20 mm/s	50 mm/s													
Vibration Limits	<p>In addition, construction activities will be required to ensure that vibration in the vicinity of underground services does not exceed the following:</p> <ul style="list-style-type: none"> ▪ Maximum Peak Particle Velocity for intermittent or transient vibrations - 30 mm/s; and ▪ Maximum Peak Particle Velocity for continuous vibrations - 15 mm/s. 														
Noise control measures	<p>During both the construction and operational phases, mitigation measures will include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring.</p>														
Communication	<p>The contractor will take a “proactive community relations” stance and will distribute information circulars informing people of the progress of works and any likely periods of significant noise / vibration during construction as required, in line with the construction programme.</p>														
Noise Control Measures	<p>Noise from building services plant will be minimised through the selection of “low noise” equipment where required as well as the incorporation of appropriate attenuation in the form of:</p> <ul style="list-style-type: none"> ▪ Acoustic enclosures for fans; ▪ Provision of attenuators for fan intake’s; and ▪ Use of acoustic rated doors on all plant rooms or enclosures. <p>The following mitigation measures will be taken to reduce noise levels from the handling of material within buildings;</p> <ul style="list-style-type: none"> ▪ White noise reversing sirens 														

Topic	Management Measure
	<ul style="list-style-type: none"> ▪ Impact protection ▪ Operator training <p>The following mitigation measures will be taken to reduce noise levels arising from the vehicular activity in and around the site:</p> <ul style="list-style-type: none"> ▪ The design of the site is such that the need for reversing should be minimised in open areas and drivers will be required to adhere to onsite traffic management to reduce the use of reverse sirens. ▪ A speed limit of 20 km/h shall be applicable to all vehicles traversing the site. ▪ Vehicles shall not be permitted to loiter on or near the south-eastern corner of the site. ▪ Under no circumstances are air brakes to be used by vehicles onsite. ▪ Vehicle horns should not be sounded whilst onsite, except in the event of an emergency.
Construction noise and vibration monitoring	It is recommended that the appointed contractor monitor levels of noise and vibration at nearby sensitive locations and/or development site boundaries.
Site operational noise monitoring	In the operational phase, and as part of the sites Licence to operate (i.e. IEL / IED), noise levels will be required to be monitored annually in accordance with the EPA <i>Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities</i> (NG4).

6.5 Odour Management – RBSF Component

There are no odour issues associated with the construction phase. An Odour Management Plan will be developed by the operator for the operational stage.

Table 6-5: Odour Management Measures - RBSF

Topic	Management Measure
Odour Control Plan Operational Phase	<p>An Odour Management Plan (OMP) will be developed and implemented for the operational phase and will</p> <ul style="list-style-type: none"> ▪ detail best operational practices ▪ identify all odour sources ▪ provide good housekeeping principles and guidance on effective operation of the odour control system. ▪ Provide operator instructions for planned odour control maintenance and emergency situations with the potential to generate off site odour ▪ provide maintenance and renewal timetables for the OCU and ventilation components ▪ detail handling procedure for material with an unusually high odour ▪ provide instructions for OCU failure and contingencies to deal with a loss of power
Odour Control	All potential odour sources to be covered, extracted and treated using one of four proposed OCUs.
Odour Control Design Considerations	<ul style="list-style-type: none"> ▪ There shall be a modern building fabric with no passive louvers or vents into the storage areas to prevent fugitive emissions. ▪ 4 No. odour control units will be installed. ▪ Fast action shutter doors for vehicle access and egress will be used. ▪ There shall be no external storage and all incoming HGVs will be covered. ▪ All worker's access points to the storage areas will be fitted with separate self-closing doors with an audible alarm if doors are open for more than 30 seconds.
Odour Monitoring	<p>Post commissioning olfactometry survey for the following sources</p> <ul style="list-style-type: none"> ▪ Olfactometry testing of the inlet and outlet of all OCU; ▪ In duct air flow testing to ensure the design extraction rate of 9.72 m³.s⁻¹ is met at each unit. <p>All testing to be conducted on the following schedule/basis</p> <ul style="list-style-type: none"> ▪ Survey to be undertaken after full commissioning of the source/OCU; ▪ Recommendation of testing three months after commission to allow biological media to acclimatise; ▪ Surveys will persist on a 6 month basis until two concurrent tests are shown to be below the stated target level. Note: compliance required with both the outlet odour concentration ouE.m-3 and odour emission rate ouE.s-1 targets; ▪ Odour analysis undertaken by a nationally or internationally accredited laboratory including accreditation to the EN 13725 European standard for odour analysis; and ▪ Surveys would be considered void if conducted during periods of low odour generation, i.e. persistent cold weather and large-scale precipitation events.
Odour Monitoring	Annual testing of inlet and outlet odour concentrations;

Topic	Management Measure
	<ul style="list-style-type: none"> ▪ Outlet odour concentration (ouE.m-3) and odour emission rate (ouE.s-1) remain at expected levels used in this assessment; ▪ Ensure that extraction rates are maintained at the design level.

6.6 Dust Management – RBSF Component

This section includes the measures that are required to minimise and manage dust during the construction phase of the project. The contract specific CEMP shall detail how the following mitigation measures will be implemented.

Table 6-6: Dust Management Measures - RBSF

Topic	Management Measure
Dust Management	<ul style="list-style-type: none"> ▪ A Dust Minimisation Plan will be implemented during the construction phase. ▪ Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions. ▪ Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. ▪ Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with a tarpaulin at all times to restrict the escape of dust. ▪ Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary. ▪ Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. ▪ Water bowsers will be deployed within the sites during periods of dry weather to damp down potential dust generation from unbound surfaces.
Dust Management general	<p>Dust mitigation measures will be specified in the Construction Stage Environmental Management Plan and with the agreement of the planning authority. The Contractor shall ensure that management measures follow the guidelines set out in BE Report 456</p> <p>Measures to mitigate the emission of dust due to construction activities should include, where appropriate and practicable:</p> <ul style="list-style-type: none"> ▪ wind breaks and barriers, ▪ frequent cleaning and watering of the construction site and associated access roads, ▪ control of vehicle access, ▪ vehicle speed restrictions, covering of stockpiles, ▪ use of gravel at site exit points to remove caked on dirt from tyres and tracks, ▪ washing of equipment at the end of each work day
Dust Monitoring	<p>The Contractor will comply with the TA Luft Standards “Technical Instructions on Air Quality Control”. Dust levels at the site boundary shall not exceed 350 mg/m²/day averaged over a continuous period of 30 days. A monthly survey and monitoring programme of dust and particulate emissions shall be undertaken to provide for compliance with these limits.</p>

6.7 Land and Soils (Including Waste) Management – RBSF Component

This section includes the measures that are required to manage waste impacts and to minimise impacts on the land soils during the construction phase of the project. The contract specific CEMP shall detail how the following mitigation measures will be implemented. Many of the construction management measures proposed in Section 5 cover the Land and Soils Environment. A project specific Waste Management Plan in accordance with “Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (DoEHLG) - June 2006)” will be drafted by the various contractors.

Table 6-7: Land and Soils (Including Waste) Management Measures - RBSF

Topic	Management Measure
Waste Management Plan	IW with the assistance of the appointed Contractor will prepare a contract specific Waste Management Plan for the project in accordance with “Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. This will provide details of the exact methods it is proposed to employ to remove soils from the site and will include details of the location and end use of the spoil.
Project Waste Manager	A Project Waste Manager will be appointed to oversee the implementation and adherence to the plan during the construction phase of the project.
Waste Disposal	The waste generated on site will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2012.
Reuse of Spoil	Soft materials and surplus soils that are excavated will be reused, for bunds, landscaping etc. Material that cannot be re-used will be treated in accordance with the Landfill Directive (2003/33/EC).
Contaminated Material and Spoil Disposal	<ul style="list-style-type: none"> ▪ All unsuitable (contaminated with spillages etc) material shall be disposed of in accordance with all relevant legislation including the Department of the Environment and Local Government (DoELG) (1996 to 2008), Waste Management Acts, the DoELG (1998) Waste Management (Permit) Regulations and the NRA (2008) Guidelines for the Management of Waste from National Road Construction Project. Material to be disposed of will be treated in accordance with the Landfill Directive (2003/33/EC). ▪ All waste shall be removed by waste contractors authorised under the (Waste Management (Collection Permit) Regulations, 2007 and the Waste Management Collection Permit) (Amendment) Regulations, 2008. ▪ The waste collected shall be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2012. ▪ Any soil contaminated from an accidental spillage will be contained and treated appropriately and disposed of in accordance with the Waste Management Act 1996-2012.
Management of Groundwater and Water	<p>Measures set out in the Construction Industry Research and Information Association (CIRIA) on the control and management of water pollution from construction sites shall be adhered to by the Contractor. Good construction management practices will be employed.</p> <p>During the construction stage, all potentially harmful substances (e.g. oils, diesel, concrete, etc.) will be stored in accordance with the manufacturer’s guidelines regarding safe and secure buildings/compounds. The contractor will ensure that adequate means (Spill kits) to absorb or contain any spillages of these chemicals are available at all times.</p>
Densification of Soil	To mitigate densification of the soil due to construction activities, all topsoil shall be removed and stored in advance of earthworks, the surface shall be scarified, and the topsoil replaced and reseeded upon completion.

6.8 Archaeology and Cultural Heritage Management – RBSF Component

There are no predicted impacts on the cultural and heritage environment and consequently no specific management measures are proposed.

6.9 Landscape and Visual Management – RBSF

This section includes the measures that are required to protect landscape and visual aspects during the design and the execution of the project. The contract specific CEMP shall detail all measures to be employed in relation all potential impacts on landscape and visual and how the following mitigation measures will be implemented.

Table 6-8: Landscape and Visual Management Measures – RBSF

Topic	Management Measure
Landscaping Plan	The scheme includes for an appropriate and comprehensive landscape scheme comprising earth mounding, dense deciduous and evergreen planting and an upgraded roadside boundary railing and entrance detail. This Landscaping and Reinstatement Plan will be agreed with the contractor and other appropriate stakeholders. Landscape measures will be completed as part of the construction works and maintained to ensure establishment. Failed or dead plants will be replaced in the following planting

Topic	Management Measure
	season.
Hoarding	Construction hoarding of minimum 2.4m in height is to be provided on the boundaries with the residential site (The Peter McVerry Trust site) at the southeast corner of the site.
Construction Compounds	Construction compounds will not be located adjacent to the site boundary with The Peter McVerry Trust site; Earth berms are to be constructed to provide a basis for immediate low-level screening and enhanced screening effect from proposed planting; Landscape measures, including extensive planting works, will be completed as part of the construction works The boundary with the R135 will be upgraded to a new boundary railing backed by proposed landscape works.
Reinstatement of landscape	Proposed landscape works, including the extensive planting, will be maintained in line with standard landscape maintenance practice so as to ensure establishment. Failed or dead plants will be replaced in the planting season following identification of any such defects.
Lighting	Lighting standards are to be fitted with horizontal cut-off fittings to avoid light spill.
Landscape Related Works Monitoring	Monitoring of landscape-related works is an integral aspect of the Proposed WwTP Component, and includes monitoring of: <ul style="list-style-type: none"> ▪ Tree and hedgerow removal, retention and protection; ▪ Topsoil stripping and storage; ▪ Disturbance by site works, services etc.; ▪ Excavation / alteration of ground levels; ▪ Landscape build-up; profiling and cultivation; ▪ Landscape finishing and implementation; ▪ Proposed planting and grass seeding; and ▪ 12 months aftercare of landscape measures. All works associated with soil stripping and movement; landscape build-up and finishing and landscape implementation shall be approved and monitored by a qualified Landscape Architect.

6.10 Material Assets Management – RBSF

This section includes the measures that are required to material assets during the design and the execution of the project. The contract specific CEMP shall detail all measures (including method statements) to be employed and how the following mitigation measures will be implemented.

Table 6-9: Material Assets Management Measures - RBSF

Topic	Management Measure
Utilities	<ul style="list-style-type: none"> ▪ Communication and consultation will be conducted with public utility providers ahead of construction commencement. ▪ Underground surveying techniques are a key method of understanding the below ground conditions and confirming the presence of utility services. A Cable Avoidance Tool and a Signal Generator (CAT & Genny) are used to scan the surface of the ground with an audible signal being developed where underground utilities are detected. Surface radar scanning shall also be used to locate underground services before commencement of any mechanical excavation in the vicinity of underground services. These detection surveys shall be undertaken by the Contractor. ▪ Method Statements shall be developed for the construction phase by the Contractor to ensure that all underground services are located manually and carefully protected. The CEMP prepared by the Contractor and approved by IW shall outline a methodology and procedure for carrying out such detection surveys ▪ An avoidance policy shall be adopted where possible in relation to all services and appropriate protection shall be provided for all above and below ground services as necessary.
Drainage and Water Supply Infrastructure	<ul style="list-style-type: none"> ▪ The mitigation measures outlined for utilities will be repeated. ▪ All runoff from paved areas will pass through an oil/fuel interceptor to ensure that contaminated waters are not discharged into adjacent watercourses. ▪ A shut-off valve will be installed on the outlet to the Huntstown Stream. This will be used to contain any contaminated runoff in the event of a major accident on site.

6.11 Traffic Management - RBSF

The Contractors will provide a Traffic Management Plan as part of their contract specific CEMPs. This Traffic Management Plan will be developed in consultation with the ER on award of the Contract/s. The table below lists the mitigation measures proposed in relation to traffic management and pedestrian access.

Table 6-10: Traffic Management Measures - RBSF

Topic	Management Measure
Traffic Management Plan	An Outline Traffic Management Plan will be drafted by Irish Water in full consultation with Fingal County Council, An Garda Síochána, the Fire Service and the Ambulance service. The Outline Traffic Management Plan will be developed by the Project Supervisor Construction Stage into a detailed contract specific Traffic Management Plan in full consultation with the same stakeholders.
Abnormal Loads	An Application for an Abnormal Load Permit will be made to Fingal Co. Council in advance for any abnormal loads exceeding the thresholds laid out in the Road Traffic (Construction and Use of Vehicles) Regulations 2003. Where possible, abnormal load movements will be restricted to evening or night time to minimise disruption to local traffic and traffic on strategic routes.
Site Deliveries	Restricted HGV movements into and out of site to avoid peak traffic shall be in force during both construction and operational phases.
Haul Vehicles	Haul vehicles must be covered after loading to ensure that there is no risk of material falling from the vehicle.
Equipment Management	Tracked excavators will be moved to and from the site on low-loaders and will not be permitted to drive on the street pavements.
Wheel Washes and Road Cleaning	Wheel washers / judder bars will be placed at all site access points to minimise the migration of detritus onto the public roads. The roads will be inspected and cleaned on a regular basis.
Construction Traffic Monitoring	Traffic flow and vehicle queue lengths at the N2 Northbound Slip Road Junction shall be monitored as part of the Detailed Traffic Management Plan process and restrictions shall be placed on the movement of construction related traffic if deemed necessary by Dublin City Council and/or an Garda Síochána.

APPENDIX A: ENVIRONMENTAL MANAGEMENT FORMS

Corrective Action Form CAR No.:

Nature:	
<input type="checkbox"/> Complaint <input type="checkbox"/> Inspection <input type="checkbox"/> Audit <input type="checkbox"/> Environmental Monitoring <input type="checkbox"/> Environmental Incident <input type="checkbox"/> 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 <input type="checkbox"/> Action Taken:	
No <input type="checkbox"/>	
Corrective / Preventive Yes <input type="checkbox"/> Action Effective:	
No <input type="checkbox"/>	
Verified By (Environmental Manger):	Date:

Complaint Form

Name:	Address:
Phone Number:	Email Address:
<p>Nature of Complaint</p> <p><input type="checkbox"/> Air (dust, particulates emissions, gas, odour)</p> <p><input type="checkbox"/> Water (stream pollution, mud)</p> <p><input type="checkbox"/> Land (Waste, oil spills, landfill, hazardous waste)</p> <p><input type="checkbox"/> Noise (hauling trucks, equipment)</p> <p><input type="checkbox"/> Housekeeping (wastes, mud/ dust on public road)</p> <p><input type="checkbox"/> Others (please specify):</p>	
<p>Details of complaint:</p> 	
<p>Sign: __ Date: __</p>	
<p>Office Use Only</p> <p>Complaint Number: _____ Corrective Action Number: _____ Site condition at the time of complaint: Corrective /Preventive Action Taken:</p> <p>Complaint Closed by Environmental Manager: _____ Date:</p>	

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:	<input type="checkbox"/> Small scale (within site) <input type="checkbox"/> Isolated Site (within site) <input type="checkbox"/> Large scale (outside site) <input type="checkbox"/> Isolated Site (outside site)
Potential Impacts:	<input type="checkbox"/> Air Pollution <input type="checkbox"/> Surface Water Pollution <input type="checkbox"/> Groundwater <input type="checkbox"/> Other: <input type="checkbox"/> Noise Pollution <input type="checkbox"/> Soil Pollution <input type="checkbox"/> 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:	

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:	

Weekly Environmental Inspection Record Sheet

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)	Action by Date	Signed completion 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)						

Weekly Environmental Inspection Record Sheet

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)	Action by Date	Signed completion date
	Yes	No	n/a			
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?						
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)						

Weekly Environmental Inspection Record Sheet

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)	Action by Date	Signed completion date
	Yes	No	n/a			
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?						
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)						

Weekly Environmental Inspection Record Sheet

Inspection Items	Implemented?			Remarks (i.e. specify location, good practices, problem observed, possible cause of nonconformity and/or proposed corrective/preventative actions)	Action by Date	Signed completion date
	Yes	No	n/a			
Protection of Flora and Fauna						
Is there any visible damage to flora and fauna?						
Is the SAC/ SPA adjacent the onshore compound free from ancillary construction activities?						
Is dust present on the flora along the Pigeon House Road (adjacent SAC/ SPA)?						
Is a marine mammal officer present during construction of the diffuser shaft?						
Others (please specify)						
Protection of Historical Heritage						
Are earthworks being monitored by a suitably licensed and qualified archaeologist?						
Are specified set back distances from quay walls being enforced?						
Others (please specify)						

APPENDIX B: CEMP CONTACT LIST

Client Contact Data

Table H1: Ervia and Irish Water Data

Name	Designation	E-mail	Tel No.	
			Landline	Mobile

Employers Representative Contact Data

Table H2: Employers Representative Key Personnel contact details

Name	Designation	E-mail	Tel No.	
			Landline	Mobile