



Ringsend Wastewater Treatment Plant Upgrade Project

OUTLINE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Ringsend WwTP 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.
	Construction activities are undertaken in accordance with national/international legislation.

Objective /Principal	Description
	<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 Ringsend component of the Upgrade Project may comprise several contracts to cover the various works elements.

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 elements: -

- **Ringsend WwTP Element:** Upgrade Works at the Ringsend WwTP; and,
- **RBSF Element:** 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:

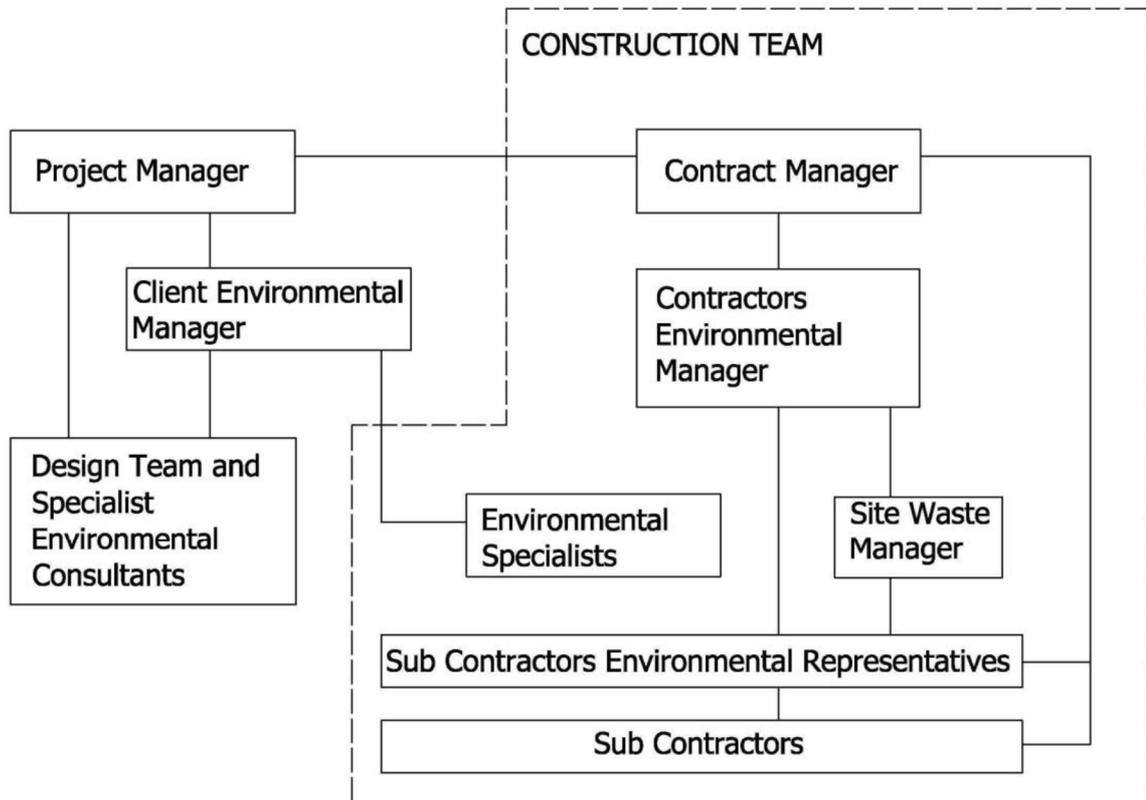
- Preparing, maintaining and ensuring implementation of the CEMP;
- Establishing, implementing, and maintaining the Environmental Management System in line with ISO 14001;
- Conducting regular environmental inspections and audits as per the frequency specified in the Contract and checking adherence to 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
- CAW (Ringsend Contracts)
- 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 Ringsend WwTP 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. The existing plant operator (CAW) and the Contractor will facilitate and cooperate with this 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	<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 inter alia Waste Management, Invasive Species Management, Traffic Management, Monitoring Plans, and Emergency Incident Response Plan.</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	<p>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</p> <p>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.</p>
Environmental Incident Response Plan	<p>An 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 banded 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).

Topic	Management Measure
	<ul style="list-style-type: none"> 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 Handling	<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. 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 Dublin City 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 – RINGSEND 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 - Ringsend 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 - Ringsend

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 Quality Management – Ringsend 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 Quality Management Measures - Ringsend

Topic	Management Measure
Final Effluent Quality Monitoring	The final effluent will be required to be monitored in accordance with the terms of the Wastewater Discharge Authorisation.
Receiving Water Quality Monitoring	The receiving waters will continue to be monitored in accordance with the requirements of the different directive and statutory instruments, by the relevant public authorities.

6.3 Terrestrial Biodiversity Management – Ringsend 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
Visual Disturbance of Birds on Grassland	To mitigate against disturbance of birds on the grassland, solid screening will be erected prior to construction to reduce or eliminate any visual disturbance (this is already in place as part of the capacity upgrade contract).
Japanese Knotweed	An Invasive Species Management Plan and method statement will be prepared (as part of the project specific CEMP) for the control of disturbance to soils containing Japanese Knotweed and the movement and disposal of soils and vegetation from the site. The method statement will follow " <i>Irish Water Information and Guidance Document on Japanese Knotweed</i> ".

Topic	Management Measure
	The implementation of the invasive species management plan shall be overseen by a suitably qualified ecologist/botanist familiar with Japanese Knotweed. An Outline Invasive Species Management Plan has been prepared, see Appendix 6A.
Dust control	A Dust Management Plan will be developed. See EIAR Appendix 8B.
Water Bird Monitoring	A series of monthly surveys of waterbirds on the grassland, immediately south of the Proposed WwTP Component, will be carried out each winter between October and April. When compared with the baseline period and general population trends, this will allow assessment of the efficacy of the mitigation measures on potential disturbance. A record will be maintained of any disturbance incidents to the waterbirds on this site where these are connected with the construction works.
Monitoring. Potential changes in waterbird population related to effluent discharge	A series of monthly surveys will be carried out to monitor population levels of waterbirds in Dublin Bay (including South Dublin Bay and River Tolka Estuary SPA and North Bull Island SPA) in all months for the period of construction of the Proposed WwTP Component. This monitoring could be integrated with a comprehensive monitoring programme currently being undertaken by BirdWatch Ireland for all of Dublin Bay but must be accompanied by appropriate funding commitments.
Monitoring Invasive Plant Species	Annual monitoring of potentially invasive plant species in the immediate vicinity of the Proposed WwTP Component will be undertaken to assess the efficacy of control measures proposed in the Invasive Species Management Plan. Where necessary, further control measures may be required.

6.4 Marine Biodiversity Management – Ringsend Component

This section includes the measures that will be implemented in relation to Marine Biodiversity.

Table 6-4: Marine Biodiversity Management Measures - Ringsend

Topic	Management Measure
Changes in composition and abundance of macroinvertebrate communities	Post-construction monitoring of macroinvertebrate communities will be carried out to detect any changes in the composition and abundance of the constituent taxa.
Receiving Water Quality	Post-construction water quality surveys will be carried out to validate the model output.

6.5 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.

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. The particular receptors that are sensitive to vibration are protected structures, ESB Turbines and gas pipelines under the WwTP site.

Table 6-5: Noise and Vibration Management Measures - Ringsend

Topic	Management Measure									
Construction Noise and Vibration	<p>It will be a requirement for the Contractor to employ and implement best practice construction noise and vibration management techniques throughout the construction phase in order to further reduce the noise and vibration impact to nearby noise sensitive receptors.</p> <p>Contractor will compile and implement a Noise and Vibration Management Plan (NVMP) which will address</p> <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. 									
Construction Noise and Vibration	<p>The Contractor will provide proactive community relations and will notify the public and vibration sensitive premises before the commencement of any works forecast to generate appreciable levels of noise or vibration, explaining the nature and duration of the works.</p> <p>The Contractor will distribute information circulars informing people of the progress of works and any likely periods of significant noise and vibration.</p>									
Construction Noise and Vibration	<p>During the construction and demolition phases, the Proposed WwTP Component 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 style="width: 70%;">Allowable Limit at Nearest Sensitive Receptor (dB L_{Aeq}) Construction Stage</th> </tr> </thead> <tbody> <tr> <td>Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)</td> <td>70dB L_{Aeq,1hr},</td> </tr> <tr> <td>Evening (19:00 to 23:00hrs)</td> <td>65dB L_{Aeq,1hr},</td> </tr> <tr> <td>Night time (23:00 to 07:00hrs)</td> <td>55dB L_{Aeq,1hr},</td> </tr> </tbody> </table>	Period	Allowable Limit at Nearest Sensitive Receptor (dB L _{Aeq}) Construction Stage	Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	70dB L _{Aeq,1hr} ,	Evening (19:00 to 23:00hrs)	65dB L _{Aeq,1hr} ,	Night time (23:00 to 07:00hrs)	55dB L _{Aeq,1hr} ,	
Period	Allowable Limit at Nearest Sensitive Receptor (dB L _{Aeq}) Construction Stage									
Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)	70dB L _{Aeq,1hr} ,									
Evening (19:00 to 23:00hrs)	65dB L _{Aeq,1hr} ,									
Night time (23:00 to 07:00hrs)	55dB L _{Aeq,1hr} ,									
Operation phase mitigation measures	<p>Noise from onsite 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 blower fans and compressors; ▪ Provision of silencers for blower fan intake and extract points; ▪ Vibration isolation mounts for all proposed internal and external plant items; ▪ Use of acoustic rated doors on all relevant enclosures and plant room access points; and, ▪ Appropriate siting of all fixed plant. 									
Noise limit at Sensitive Receptors (Operational Stage)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Period</th> <th style="width: 70%;">Allowable Limit at Nearest Sensitive Receptor (dB L_{Aeq}) Operational Stage</th> </tr> </thead> <tbody> <tr> <td>Daytime (07:00 – 23:00)</td> <td>55dB L_{Aeq,1hr},</td> </tr> <tr> <td>Night time (23:00 to 07:00hrs)</td> <td>45dB L_{Aeq,15min}</td> </tr> </tbody> </table>	Period	Allowable Limit at Nearest Sensitive Receptor (dB L _{Aeq}) Operational Stage	Daytime (07:00 – 23:00)	55dB L _{Aeq,1hr} ,	Night time (23:00 to 07:00hrs)	45dB L _{Aeq,15min}			
Period	Allowable Limit at Nearest Sensitive Receptor (dB L _{Aeq}) Operational Stage									
Daytime (07:00 – 23:00)	55dB L _{Aeq,1hr} ,									
Night time (23:00 to 07:00hrs)	45dB L _{Aeq,15min}									
Vibration Limits. Protected Structures	<p>The maximum level not to be exceeded at the nearest vibration sensitive location is 12 mm/s peak particle velocity (when measured in any one of the three mutually orthogonal plains). (2012 Consent)</p> <p>The 2018 EIAR commits to the following at sensitive structures</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property 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>3 mm/s</td> <td>3 – 8 mm/s</td> <td>8 – 10 mm/s</td> </tr> </tbody> </table>	Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of			Less than 10 Hz	10 to 50 Hz	50 to 100 Hz (and above)	3 mm/s	3 – 8 mm/s	8 – 10 mm/s
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Less than 10 Hz	10 to 50 Hz	50 to 100 Hz (and above)								
3 mm/s	3 – 8 mm/s	8 – 10 mm/s								
Vibration	<p>Vibration levels at the turbine building foundation should be less than 6 millimetres per second. This is a trigger level at which action is required to reduce vibration levels. Note that the ESB turbine foundations are</p>									

Topic	Management Measure
Limits. ESB Turbines	monitored by ESB and a trip is caused if the peak particle velocity in any of the three orthogonal directions exceeds 11.0 mm/s.
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).

6.6 Odour Management – Ringsend Component

Odour control units have been installed as part of an ongoing odour control programme. An Odour Management Plan will be produced.

Table 6-6: Odour Management Measures - Ringsend

Topic	Management Measure
Odour Control	The principles of the site Odour Management Procedures (OMP) will be followed to include odour management of the construction phase of the new processes. The OMP will also detail the operational, management and maintenance procedures to minimise emissions including during the construction phase. This includes a daily condition and operation check, weekly marker compound surveys and biannual olfactometry testing for all OCUs.
Odour Control	The site Odour Management Procedures (OMP) will be updated to include odour management of the new processes. This will include updating the OMP to identify all potential new odour emission sources. The OMP will also detail the operational, management and maintenance procedures to minimise emissions including during plant failure or emergency situations. The operator has an established management procedure for reporting and investigating public odour complaints and this procedure will be maintained. This includes a daily condition and operation check, weekly marker compound surveys and biannual olfactometry testing for all OCUs.
Odour Control	The OMP will also form the management process to ensure that process sources and OCUs are operated correctly and do not fall into disrepair. In accordance with the OMP, regular flow and olfactometry testing would be used to quantify the odour removal performance. Although not suggested in the current OMP, it is suggested that any odour monitoring result in excess of the model input levels should be confirmed, investigated and rectified.
Odour Control	Odour control measures have been installed to ensure that the Proposed WwTP Component will meet the project odour goal of 10 ouE/m ³ as the 99.4th percentile of hourly averages at the boundary of the WwTP and 3 ouE/m ³ at the nearest sensitive receptor, as confirmed by modelling exercises as outlined in Volume 3, Section 10. The Odour Management Plan will be updated. The updated OMP will detail the construction, operational, maintenance and emergency procedures to minimise emissions at all phases of the Proposed WwTP Component.
Odour Monitoring	Post commissioning olfactometry survey for the following sources <ul style="list-style-type: none"> ▪ Converted AGS reactor for all three operational phases; ▪ Secondary Treatment Upgrade; ▪ BnM OCU 1, 2 and 3, which were at the time of the most recent sampling, not fully commissioned or connected to all proposed odour sources; and ▪ Any existing OCU that is modified in any way as to accommodate processes forming part of the Proposed WwTP Component. <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 (maximum 6 months after commissioning); ▪ 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

Topic	Management Measure
	<ul style="list-style-type: none"> 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 (operational)	<p>Any breaches of target levels should be highlighted as an operation concern in line with a commitment to maintain and minimise odour emissions from the Ringsend WwTP on a long term basis. The following operator responses are proposed based on the result of the post-commissioning testing (three cycles).</p> <p>In the event that the newly commissioned source meets the stipulated target level</p> <p>The source should be added to the odour monitoring schedule indicated in the current Ringsend OMP</p> <p>In the event that the newly commissioned source meets the target level</p> <p>Option a) an engineering or process solution should be sought to address the elevated emissions. Further monitoring would be required post improvement to confirm that the target levels are met.</p> <p>Option b) A full site odour modelling assessment is presented to show that an elevated emission from the source does not result in a predicted impact at any receptor location</p> <p>This post-commissioning monitoring is presented in addition to the schedule of monitoring proposed as part of the Ringsend WwTP OMP. The current testing schedule in relation to olfactometry analysis is summarised in Section 10.6.2 of this Volume of the EIAR.</p>

6.7 Dust Management – Ringsend 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 6-7: Dust Management Measures - Ringsend

Topic	Management Measure
Construction Phase - Air Quality	The dust minimisation measures specified in Appendix 8B of Volume 3 of the EIAR will be incorporated into a site-specific CEMP and implemented during the construction phase of the Proposed WwTP Component.
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 BRE 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	During the construction phase, dust deposition monitoring will be put in place to ensure dust mitigation measures are adequately controlling emissions. Dust monitoring will be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2 m above ground level. The TA Luft limit value is 350 mg/(m ² *day) during the monitoring period which is between 28 - 32 days.
Dust Management	Water bowsers will be deployed within the sites during periods of dry weather to damp down potential dust generation from unbound surfaces.

6.8 Land and Soils (Including Waste) Management – Ringsend 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 6-8: Land and Soils (Including Waste) Management Measures - Ringsend

Topic	Management Measure
Environmental Management Plans - Including Invasive Species and Waste Management	The construction contracts will require that the Contractor produce a contract specific Construction Environmental Management Plan and waste and invasive species management plans will form part of this document. An Outline Invasive Species Management Plan has been produced and is contained in Appendix 6A Volume 3 of the EIAR. The project specific Waste Management Plan shall include for the disposal of contaminated soil.
Excavation and Waste Disposal	All unsuitable (contaminated) 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 Projects. Material that cannot be re-used will be handled in accordance with the Landfill Directive (2003/33/EC).
Excavation and Waste Disposal	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.
Excavation and Waste Disposal	The waste collected shall be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2010.
Excavation and Waste Disposal	The Contractor is required to prepare a Waste Management Plan for the Proposed WwTP Component 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 manage excavated soil on site and to remove spoil from the site and will include details of the location and end use of the spoil.
Excavation and Waste Disposal	As soil characteristics will vary during the construction operations, the Contractor will be required to implement, prior to the commencement of construction works, and thereafter maintain throughout the construction phase, a comprehensive environmental monitoring programme in respect of the soil characteristics. If necessary, disposal outlets will be modified to ensure continuous compliance with all relevant regulations and with this EIAR.
Excavation and Waste Disposal	A Project Waste Manager will be appointed by the Contractor to oversee the implementation and adherence to the plan during the construction phase of the Proposed WwTP Component.
Management of Construction Induced Ground Movements	<p>In order to mitigate potential impacts associated with construction induced settlement, the following will be implemented:</p> <ul style="list-style-type: none"> Condition surveys of the adjacent structures will be carried out prior to construction to provide a baseline for excavation monitoring and piling works; Appropriate batters or appropriate temporary works solutions such as sheet piling and trench boxes will be adopted during excavations above groundwater to ensure cut face stability; Where excavations extend below groundwater, appropriate retention and construction dewatering systems will be adopted to mitigate the potential effects of drawdown on nearby structures, roads and major services; Appropriate foundation construction techniques will be adopted to ensure settlements are within tolerable limits; and Settlement monitoring will be carried out during construction to ensure settlements are within tolerable limits.

Topic	Management Measure
Construction Dewatering	<p>Management of temporary construction dewatering and abstracted groundwater discharge will be required for the Proposed WwTP Component. Sheet piling will be required to seal out groundwater inflows from excavations below the groundwater table.</p> <p>The Contractor will be required to provide a method statement for the dewatering of excavations below the water table.</p>
Construction Dewatering	<p>Where construction dewatering is undertaken, a consent/licence issued under Section 16 of the Local Government (Water Pollution) Acts and Regulations must be obtained by the Contractor. The discharge licence is likely to be subject to conditions governing: the measurement of flow; effluent quality prior to discharge; pre-treatment (e.g. settlement/filtration, hydrocarbon separation, pH adjustment, etc.); rates of discharge and permitted volumes; provisions for monitoring, and the requirement and frequency of sampling. All groundwater discharges shall strictly comply with all conditions, constraints and requirements imposed under the discharge licence.</p>
Construction Dewatering	<p>In order to mitigate potential impacts associated with the management of groundwater and water the contract documents for the Proposed WwTP Component will include the following provisions:</p> <p>Discharge control will be modified as necessary to ensure continuous compliance with all relevant regulations and with this EIAR;</p> <p>All 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);</p> <p>If required, some on-site storage can be provided to allow discharge to sewer over non-peak times each day; and</p> <p>If required, some on-site storage can be provided to allow discharge to sewer over non-peak times each day.</p>
Management of Invasive Species	<p>Treatment of the Japanese Knotweed will be undertaken in-situ for the bund in the northeast corner of the site.</p> <p>In order to mitigate potential impacts associated with spread of invasive species, the contract documents for the Proposed WwTP Component will include the following provisions:</p> <p>The Contractor will employ a qualified ecologist or botanist or horticulturalist to verify if Japanese Knotweed is present prior to carrying out any earthworks. A method statement and contract specific Invasive Species Management Plan will be prepared for the control of disturbance to soils containing Japanese Knotweed and the movement and disposal of soils and vegetation from the site. The method statement shall follow the "Irish Water Information and Guidance Document on Japanese Knotweed";</p> <p>A suitably qualified ecologist will oversee the implementation of the Invasive Species Management Plan and monitor the success of the mitigation measures post-construction;</p> <p>The area affected by the Japanese Knotweed will be marked with a temporary exclusion zone and there will be no working of vehicles with caterpillar tracks within this exclusion zone;</p> <p>The removal of soil or vegetation from the area affected by the Japanese Knotweed will be carried out separately from other site clearance. Soil and vegetation removed will be stockpiled in a separate banded area, at least 50 meters from high water mark and where there is no risk of accidental transfer or spreading of vegetation or soil onto adjacent areas;</p> <p>The soil or vegetation removed from the affected area will be transported to a suitably licensed Landfill Facility for 'deep burial' which comprises immediate cover of 1 m to 2 m with final burial/cover of a minimum of 5 m within 2-4 weeks of initial placement. The full depth of cover will comprise material which is not infected with Japanese Knotweed. These burial/cover requirements are strict and not achievable at all licensed landfill facilities and each Landfill Operator's attention must be drawn to them prior to determining whether the waste can be accepted at any individual facility; and</p> <p>Material infected with Japanese Knotweed is deemed to be 'non-hazardous waste' during transportation to a licensed landfill facility and therefore, is subject to the Waste Management Acts and Regulations. The classification of the material at the Landfill Facility is determined by the Landfill Operator.</p> <p>Note: Where Japanese Knotweed is present but is greater than 7 metres from any area to be excavated, in-situ treatment using herbicides will be undertaken.</p>
Accidental Spillage	<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>
Accidental Spillage	<p>During the construction stage, all potentially harmful substances (e.g. oils, diesel, herbicides, pesticides, 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 to absorb or contain any spillages of these chemicals are available at all times. Suitable measures will be taken to minimise the potential for pollution arising from accidental spillage.</p>
Invasive Species Disposal	<p>The NPWS must be informed prior to excavation and removal of Japanese Knotweed and a licence for disposal obtained.</p>

6.9 Archaeology and Cultural Heritage Management – Ringsend Component

This section includes the measures that are required to protect archaeology and cultural heritage during the design and the execution of the project. The contract specific CEMP shall detail all measures (including method statements) to be employed in relation to all potential impacts on archaeology and cultural heritage and how the following mitigation and management measures will be implemented. It should be noted that the site investigation results indicate that all excavations on the WwTP Site will be within the made ground. And consequently, there will be no need for archaeological monitoring of this element. If piling using Continuous Flight Augur is adopted the depth will extend below made ground and in that case supervision by an Archaeologist may be required. All the archaeological mitigation in the contract specific CEMP will be subject to consultation and approval from the National Monuments Section of the Department of Culture, Heritage and the Gaeltacht.

Table 6-9: Archaeology and Cultural Heritage Management Measures - Ringsend

Topic	Management Measure
Excavations	Where construction compounds requiring any sub-surface works to provide areas of hard standing are developed within the area of the Pigeon House Fort, Pigeon House Harbour and in the area with potential trash deposits to the south of the fort walls, any excavation work will be archaeologically monitored.
Excavations	The site preparation within the interior of the Pigeon House Fort will require topsoil stripping for the access road and has the potential to uncover material associated with the fort and will be monitored by a suitably qualified archaeologist.
Excavations	Where construction of hard standing for cranes requires any sub-surface works within the area of the Pigeon House Fort and in the area with potential trash deposits to the south of the fort walls, any excavation work will be archaeologically monitored.
Archaeological Monitoring of Excavations	Archaeological monitoring will be undertaken during any excavation /ground disturbance works that extend beyond the made/reclaimed ground layer. The piling operation will extend below the made ground layer into natural ground and will require monitoring by an archaeologist licensed by the Department of Culture, Heritage and the Gaeltacht.

6.10 Landscape and Visual Management – Ringsend Component

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 6-10: Landscape and Visual Management Measures - Ringsend

Topic	Management Measures
Protection of Trees	Existing belt of tree and shrub planting located along Pigeon House Road (refer to Error! Reference source not found.) will be retained and protected in line with <i>BS 5837 2012: Trees in relation to design, demolition and construction - Recommendations</i> .
Construction Compound	The existing construction compound previously used for the construction of the Waste to Energy Facility, will be used, in part, for the initial more intensive phase of site construction. Screening (min 2.0 m high) is to be provided on western, southern and eastern boundaries of the compound.
Screening	Screening will be erected along the southern and eastern site boundaries of the existing WwTP / works site.
Screening	Screening will be erected around temporary construction compound sites.
Reinstatement of compound	Following decommissioning, all compound areas will be fully reinstated to pre-compound use finish (i.e. mainly grassland).

Topic	Management Measures
areas	
Reinstatement of Landscape	Given the low level of landscape and visual impact anticipated from the completed Proposed WwTP Component the key mitigation measures will involve good construction site management, full decommissioning of construction elements and compounds, and appropriate reinstatement of disturbed site and compound areas. New tree planting is to be reinstated along the eastern boundary of the existing WwTP site.
Reinstatement of Landscape	The reinstated landscape buffer to the east of the Wastewater Treatment Plant will be approximately 3 m wide. Planting will be a diverse mix of evergreen conifers such as Pine, and evergreen shrubs such as Sea-buckthorn and Oleasters inter-planted and under-planted with Alder, Sycamore, Dog-rose, Hawthorn and Blackthorn.
Concrete Cleaning	The stained concrete elevations of the existing SBR tanks will be cleaned to present an overall consistent visual appearance in-line with new structures to be provided. Refer to the 'as existing' and 'as proposed' photomontage images for View 4 and View 5 for illustration of this cleaning effect.
Landscape Works	Proposed landscape works 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 Standards	Any new lighting standards will be fitted with horizontal cut-off fittings to avoid light spill.
Monitoring Landscape Related Works	<p>Monitoring of landscape-related works is an integral aspect of the Proposed WwTP Component, and includes monitoring of:</p> <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. <p>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.</p>

6.11 Material Assets Management – Ringsend Component

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 6-11: Material Assets Management Measures - Ringsend

Topic	Management Measure
Road Network	<p>A Traffic Management Plan, together with safety management plans will be developed for the construction phase. See Volume 3, Section 13: Traffic.</p> <p>Any damage arising to the road network will be addressed in consultation with Dublin City Council Roads Dept.</p>
Land Utilisation	<ul style="list-style-type: none"> ▪ Screening will be erected along the southern and eastern site boundary of the treatment plant / works site; ▪ Screening will be erected for screening around construction compound sites; and <p>A project specific Construction Environmental Management Plan will be agreed with DCC and implemented.</p>
Amenity Grassland Brent Geese	<p>The potential disruption to the usage of the grasslands by over wintering Brent Geese can be mitigated by completing the connection to the ESNB cable during non-winter months of May-October.</p>

Topic	Management Measure
Utilities	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.

6.12 Traffic Management - Ringsend Component

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 6-12: Traffic Management Measures - Ringsend

Topic	Management Measure
Traffic Management Plan	An Outline Traffic Management Plan will be drafted by the Project Supervisor Design Process for the works in full consultation with Dublin City 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.
Traffic Management	Construction related HGV trips will adhere to the Dublin City Council HGV Management Strategy.
Traffic Management	An Application for an Abnormal Load Permit will be made to DCC/Fingal CC 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.
Sensitive Structures	Protection measures are to be provided at sensitive archaeology sites.
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.
Site Management	Wheel washers / judder bars will be placed at all site access points to minimise the migration of detritus onto the public roads.
Falling construction material from haul vehicles	Haul vehicles must be covered after loading to ensure there is no risk of construction material falling.
Site Management	Where appropriate and practicable, hard surface roads should be wet swept to remove any deposited materials; unsurfaced roads should be restricted to essential site traffic only
Staff Parking	Contractor's, subcontractor's or supplier's vehicles or staff vehicles, or any vehicles associated with the works are not permitted to park, idle or queue on the public road network. The car park to the east of Pigeon House Road will be maintained for public use only. No works vehicles or site staff private vehicles will be permitted to use this facility.
Dust Suppression	Water bowsers will be deployed within the sites during periods of hot weather to damp down potential dust generation from unbound surfaces.
Traffic Monitoring Construction	Traffic flow and vehicle queue lengths at the Sean Moore Junction and the Point Depot 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>	

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

CAW Contact Data

Table H3: Existing Operator CAW Data

Name	Designation	E-mail	Tel No.	
			Landline	Mobile