

Environmental Management Plan

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1. Introduction

This Environmental Management Plan (EMP) has been developed in accordance with O'Reilly Concrete Limited Environmental Procedures. The controlled copy of all environmental procedures is hosted on SharePoint.

This Plan is a working document, clearly stating the arrangements in place to manage the significant environmental aspects and legal requirements of this project. This Plan covers O'Reilly Concrete Limited Building activities and that of its subcontractors.

This Plan has been approved by O'Reilly Concrete Limited HSE Department at Kill and has the commitment of the Project Director, Project Manager and Engineers to fulfil the requirements of the Plan.

1.1 Purpose of the Plan

This EMP describes how O'Reilly Concrete Limited will manage environmental performance for NCH Tallaght site.

This EMP has been developed within the framework of the O'Reilly Concrete Limited EMS. The O'Reilly Concrete Limited EMS is certified to ISO 14001:2015.

This Plan will:

- Identify the environmental obligations and the hazards and risks associated with construction activities;
- Assist in the prevention of unauthorised environmental harm;
- Fulfil the environmental requirements as defined in the <Employers Requirements/Contract>;
- Minimise potential impacts on the community that relate to the environmental aspects from construction activities.

1.2 Works Description

The contract works include the following activities:

1.3 Site Location

1.4 Working Hours

1.5 Plan Objectives

The objectives of this EMP are to:

- Act as a continuous link and reference document for environmental issues between the design, construction, testing and commissioning stages of the Project;
- Demonstrate how construction activities and supporting designs will properly integrate the requirements of environmental legislation, planning consent conditions, policy, good practice, and those of the environmental regulatory authorities and third parties;
- Record environmental risks and identify how they will be managed during the construction period;
- Record the objectives, commitments and mitigation measures to be implemented together with programme and date of achievement;

- Identify key staff structures and responsibilities associated with the delivery of the Project and environmental control and communication and training requirements as necessary;
- Describe the proposals for ensuring that the requirements of the environmental design are achieved, or are in the process of being achieved, during the contract period;
- Act as a vehicle for transferring key environmental information at handover to the body responsible for operational management. This will include details of the asset, short and long-term management requirements, and any monitoring or other environmental commitments;
- Provide a review, monitoring and audit mechanism to determine effectiveness of, and compliance with, environmental control measures and how any necessary corrective action will take place.

1.6 Review and Update

Waste segregation should occur where possible.

The Site Agent/Foreman will:

- Oversee all environmental operations;
- Regularly check for any environmental issues that may arise and ensure correct procedures are in place;
- Ensure the compound is kept tidy and in good appearance at all times; and
- Order and environmental equipment that is required.

Each spill skip and fire extinguishers will be clearly labelled as to the type of fire extinguisher contained.

2. Environmental Management System

2.1 Project Organisation

Figure 1: Environmental Organisation Chart

2.2 Communication

The principal lines of internal communication in relation to the EMP are shown above. Environmental issues are communicated to staff through the site induction, toolbox talks and monthly safety meeting.

Communication with other external parties will be in accordance with the consultation requirements (Section 6) and in response to complaints (Section 3).

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Communication with other external parties will be in accordance with the consultation requirements (Section 6) and in response to complaints (Section 3).

2. Responsibilities

Table 1: Roles and Responsibilities

Name	Initials	Company	Role (Job title)	Environmental Management Responsibilities
			Company Environmental Coordinator	<ul style="list-style-type: none">Conducts environmental risk assessment, advises on environmental issues and controls, and conducts internal environmental audits
			Construction Director	<ul style="list-style-type: none">Approves and implements EMP
			Site/Project Manager	<ul style="list-style-type: none">Monitors implementation of control measures, ensures that activities, including subcontractor activities, comply with the requirements of the relevant performance requirements
			Site Safety, Health Environmental Officer	<ul style="list-style-type: none">Conducts weekly environmental inspections; carries out toolbox talks on environmental issues. Co-ordinates emergency response, including spillsChecks spill kits and orders spill control materials when required
			Site Engineer	<ul style="list-style-type: none">Ensures that works are carried out in accordance with the EMP and with the

				<p>approved works method statement</p> <ul style="list-style-type: none"> • Includes environmental matters in weekly site inspections
			<p>Section Engineers/Foreman</p>	<ul style="list-style-type: none"> • Carries out toolbox talks • Co-ordinates water/noise/dust monitoring and remedial actions • Ensures that works are carried out in accordance with the EMP and with the approved works method statement • Performs environmental inspections
			<p>Quantity Surveyors</p>	<ul style="list-style-type: none"> • Tracks the costs associated with the implementation of environmental matters and forwards to the Company Environmental Co-ordinator as required

3. Environmental Management Arrangements

3.1 Environmental Management

The environmental management system (EMS) complies with the ISO 14001:2015 standard. Those aspects of the EMS relevant to this Project are outlined in this document which also contains references to specific procedures.

3.2 Planning

The environmental planning for the project is based on information from:

- The clients project information and tender documentation;
- Local Authority Planning Permission;
- Appropriate Assessments.

Such information has been used in the environmental assessment of the activities for this project.

3.2.1. Monitoring and Checking

The significant environmental aspects of the project are monitored regularly by carrying out the following at the frequency stated below:

Table 2: Monitoring and Checking

Monitoring and Checking	Frequency
Environmental Inspections by Site Managers	Monthly
Environmental Inspection by Foremen	Weekly
Environmental Inspections by HSE Officer	Weekly
Environmental Audits by Env Co-ordinator	Quarterly
Surface Water Inspection (Visual)	Daily
Noise and Vibration Monitoring	Daily
Aspergillus Monitoring	Weekly
Dust Monitoring (Visual)	Daily

3.2.2. Action Register

A record of environmental management actions is to be kept on site. The progress for all actions is reported regularly to the appropriate member of the Management Team. Such actions will include information taken from:

- Environmental inspections;
- Audit actions: non-conformances and observations;
- Progress of actions following environmental incidents;
- Significant communications with stakeholders;
- Project issues requiring management action;
- Complaints.

These actions will be closed out, signed and dated by the appropriate person in the appropriate timeframe.

3.2.3. Performance

Environmental Performance of the project is monitored by:

- Environmental review meetings as a part of the Monthly Safety Meetings;
- Site Inspections;

- Audits conducted by the HSE Department, by external organisations or by the Client;
- A review of the quantities of waste created;
External communications and feedback;
- Review of objectives and targets (targets table Section 7);
- Corporate Social Responsibility (CSR) reporting.

3.3 Communications

3.3.1. Environmental Complaints

All environmental complaints will be recorded in the project Complaints Register. The Register is maintained on site by a nominated member of the Management Team who also allocates responsibility for resolving any issues and follows up complaints to ensure they are resolved. Any issues that are deemed to be significant will be reported to the Site Management Team and the relevant authorities as appropriate. Complaints are reviewed during internal audits by the Environmental Coordinator, where any additional measures to improve performance are discussed. Complaints are reported to Head Office also. See EP-24 Complaints Procedures for more details.

All complaints received from external sources and incidents must be reported to the Project Manager and a representative of insert client/relevant authorities as appropriate.

3.3.2. Environmental Incidents

Environmental incidents are categorised in terms of major or minor.

Major environmental incident is any situation which has resulted in significant pollution requiring high levels of resources for response and remedy and must therefore be reported to Site/Company Management, the Client and or any relevant statutory authority.

Minor environmental incident is any situation which has resulted in environmental pollution which required minimal action to aid recovery from Site/Company Management. Non reportable to the Client and/or any relevant statutory authority unless this requirement is stated elsewhere.

Refer to Environmental Procedures EP-06 and EP-24 for more details.

The Site HSE Officer will:

- Inform Site Management Team;
- Report Environmental Incident immediately to the Environmental Department;
- Investigate and issue reports on environmental incidents (using the Incident Report Form – Dangerous Occurrences/Near Misses/Environmental Incident);
- Advise the Site Agent (or similar) on corrective action (where necessary);
- Maintain an Environmental Incidents Register.

Actions regarding specific incidents including water pollution and exceeding the limit levels for dust, noise and vibration, are detailed in Section 8.

Report all environmental Incidents immediately to the HSE Department 045-886557.

3.4 Subcontractors and Suppliers

3.4.1. Subcontractors

All subcontractors will be required to work in accordance with O'Reilly Concrete Limited Environmental Management Plan. Work operations will be managed by the relevant Project Managers/Site Agents to ensure

4. Summary of Emergency Procedures

Environmental emergency procedures relating to this Project include:

- Emergency Procedures for sediment release to water (EP-23);
- Containing and cleaning up spills (EP-15);
- Environmental Incident Procedure (EP-06);
- Environmental Complaints and Incidents Procedure (EP-24);
- SharePoint online incident tracking system.

For more detailed information please refer to <Environmental Emergency Plan>.

5. Environmental Planning, Aspects and Controls

5.1 Environmental Risk Assessment

During the first visit to site, notes are produced which identifies any significant environmental aspects. These notes are compared with the environmental information supplied by the client (where applicable) and used as a basis for performing the environmental risk assessment.

5.2 Environmental Risk Assessment Report

The significance of all the environmental aspects for each activity on the project have been assessed. The assessment followed the method defined in EP-02 Environmental Risk Assessment.

Refer to **Appendix 3** for the risk assessment report for this project.

5.3 Environmental Assessment and Management Controls

The management controls, which have been put in place, are appropriate to the nature, duration and scale of the activity on this project and the particular sensitivity of the local environment. They will be revised in the event of any significant changes to the scope of the activity during this Project, especially when there is additional works, or a change in the method of works.

Additional management controls will be adopted when there are changes to client requirements, stakeholder interests to a particular local environmental sensitivity.

The significant risks which are highlighted in the risk assessment and the management controls are communicated to the workforce by site inductions and toolbox talks.

5.4 Method Statements

The significant environmental aspects and the actions to apply the required controls are described in the method statement.

Method statements are produced in accordance with the contract requirements by the Site Management Team and reviewed by the Project Managers/Site Agents prior to submission for approval. When developing method statements, the EMP, Site Maps and any other relevant environmental management documents will be reviewed to assess the potential impacts of the particular activity.

All method statements will include a section entitled *Environmental and Waste Management*. For activities that have significant potential to cause adverse environmental impacts reference will be made in this section of the method statement to the control measures in Section 8 of the EMP. Additional control measures may be included where those in Section 8 prove inadequate to suit the local conditions at the site of the activity, and/or where specific measures are required by any of the authorities. The method statement must include:

- Reference to the EMP and WMP;
- The proposed method of construction and how impacts will be mitigated;
- Waste (storage, removal, end disposal sites where known);
- Hazardous substances (storage, removal and end disposal sites where known);
- Works close to waterways (sediment controls if needed);
- Dust;
- Noise and vibrations;

- Refuelling;
- Fuel storage;
- Drip trays/spill kits and other precautionary measures.

Prior to the commencement of the works, all Method statements will be reviewed by a competent person by referring to Section 8 of the EMP. Following the review, improvements will be made to the method statements as required.

6. Environmental Compliance

In accordance with Environmental Procedure 01 (EP-01) Environmental Compliance Assessment, a review of all relevant literature and contractual requirements relevant to the contract will be completed.

- Planning Conditions;
- Contract Documents;
- Preliminary Health and Safety Plan;
- All other contractual conditions and documents.

These requirements have been tabulated in **Appendix 2** (table of contractual requirements) to demonstrate how each of the requirements is addressed in the EMP.

Evaluation of Compliance

Compliance will be evaluated through inspections and audits and also reviewed at the regular site management meetings.

6.1 Consultation with Relevant Authorities

Consultation has been undertaken with the following authorities: (amend to make site specific)

- Local Council;
- EPA;
- National Parks and Wildlife Services (NPWS);
- Inland Fisheries Ireland;
- Irish Water.

6.2 Site Restrictions and Hold Points

In accordance with the Contract clauses or notification from the Client or similar the following environmental restrictions apply to the construction of the works:

Table 4: Site Restrictions and Hold Points

Clause	Restriction – Refer to Contract for Complete Details

6.3 Environmental Licences, Permits and Permissions

6.3.1. Maintaining Arrangements for Environmental Licence, Permits and Permissions

These are all legal documents associated with the work and may be from a contractor/supplier/client, or it may be an EPA or Local Authority Licences/Permit and will be maintained by the Management Team on site.

6.3.2. Licences and Permits

The Client will be requested to supply information on the licences and permissions that are required for the project. The responsibility for licence applications will be established at the start of the project or when changes occur.

The relevant environmental regulator may be informed early in the project of the environmental aspects of the work. A meeting on site will be arranged where applicable.

N.B. A copy of all formal licences is to be sent to the HSE Department, Kill.

The following table identifies the licences that may be required:

Table 5: Licences and Permits

Licence/Permission	Regulator	Operations
Discharge consent into watercourse or sewer	Local Authority/Irish Water	Any solid or liquid entering controlled waters (river, pond, stream, ditch) unless it is clean water
Consent for work near a watercourse	Inland Fisheries Ireland	Any work which include work over or under the water
Permissions/Licences	National Parks and Wildlife Services	Cutting of protected trees, derogation licences for protected species (bats, badgers, frogs etc), work in or near any SPA, SAC, NHA. Licences for managing invasive species
Permissions/Licences	Department of Environmental, Communities and Local Government	Excavation work in any site containing archaeological remains or natural habitat, protected Monument.
Planning Permissions	Bord Pleanála/LA	All planning permissions constraints
Waste licences/Permits	EPA/LA/NWCPO	Transport and removal of waste offsite

6.4 Company Policy and Procedures

A copy of the Company Environmental Policy is displayed at the project site offices. The policy determines the company’s overall approach to environmental management, which is developed through the EMS. This EMP has been developed taking into account the:

- Company Environmental Policy;
- Objectives and targets as specified in the Yearly Environment Plan;
- Requirements of relevant specific procedures as contained in the Environmental Procedures Manual.

6.5 Relevant Statutory Provisions

A library of environmental legislation, relevant codes of practice, standards and best practice guidance documents is maintained at the O’Reilly Concrete Limited Head office. This library is updated by the Company Environmental Coordinator through regular reviews or as required by changes in legislation and standards and developments in industry best practice. A register of legal and compliance obligations is on SharePoint for general viewing.

6.6 Design and Life Cycle Perspectives

The environmental and sustainability requirements for the project design are reviewed by project designers and construction management team and incorporated into the project as appropriate. The design and lifecycle perspectives are also reviewed by the Project Managers and Engineers to ensure that the environmental and sustainability considerations relevant to the construction works are incorporated into the works.

All environmental impacts and aspects of the project’s lifecycle, from the raw materials used, procurement processes, the transportation and delivery to site, material use in the building product or service, to the end-of-life treatment and final disposal of the materials and products will be assessed, with the most favourable environmental option used where possible.

Input and consideration from relevant stakeholders will also be incorporated into both the design and construction processes. Communication with stakeholders may take place at various stages and means e.g. planning process, community newsletters, project website, Client meetings etc.

6.7 Control of Documents

All documents relevant to the construction works will be kept and stored in accordance with the below table. Documents that are part of the site environmental management system, including inspection reports, monitoring records and meeting minutes will be kept for the duration of the project as per UKAS (United Kingdom accreditation scheme).

Table 6: Control of Documents

No.	Document	Raised By	Retained By	Statute or UKAS	Currently Held	Retention Times (Years)
1	Register of Environmental Aspects	Env Co-ordinator	Env Co-ordinator	UKAS	Head Office and Sites	3
2	Waste Transfer notes (where applicable)	External	Env Co-ordinator	Statute	Sites	3
3	Hazardous waste transfer notes	Local Authority	Env Co-ordinator	Statute	Sites	5
4	Waste Collection Permits	Local Authority	Env Co-ordinator	UKAS	Sites	Period of validity +1
5	Waste Facility Permits/Licences	Local Authority/EPA	Env Co-ordinator	UKAS	Sites	Period of validity +1
6	Energy Monitoring Records	Env Co-ordinator	Env Co-ordinator	UKAS	Head Office and Sites	3
7	Water Monitoring Records	Env Co-ordinator	Env Co-ordinator	UKAS	Sites	3
8	Local Authority/Environmental Protection Agency Licences	Local Authority/EPA	Env Co-Ordinator Site	UKAS	Sites	Period of validity +1
9	Environmental communication from external sources	External	Env Co-ordinator	UKAS	Sites	3
10	Audit Reports	Env Co-ordinator	Env Co-Ordinator Head Office	UKAS	Head Office and Sites	3
11	Corrective Action Forms	Env Co-ordinator	Env Co-Ordinator Head Office	UKAS	Head Office and Sites	3
12	Env N/C or Env Incident Report	Any member of staff	Env Co-Ordinator Head Office	UKAS	Head Office	3
13	Water treatment log sheets	Site Staff	Site Staff	UKAS	Site	3
14	Calibration Certificates	External Testers	Site Staff/ Env Co-ordinator	Statute	Site	3
15	Environmental Management Plans	Site Staff	Site Staff	UKAS	Sites	3
16	Waste Management Plans	Site Staff	Site Staff	UKAS	Sites	3

17	Environmental Risk Assessment	Env Co-ordinator	Env Co-ordinator and HSE Officer	Best Practise	Head Office	3
18	Department of Arts Heritage and Gaeltacht	Env Co-ordinator	Env Co-ordinator	Best Practise	Sites	3

Controlled documents will be:

- Reviewed at least annually and updated as appropriate;
- Marked as superseded once obsolete or destroyed;
- Dated and marked with dates of revisions.

7. Environmental Objectives and Targets

The objectives and targets are set in relation to the aspects identified from each site in order to reduce our significant aspects. As a minimum they should include:-

- The prevention of pollution, including missions to air, water and land;
- Nuisance impacts including dust, noise and vibration;
- Protection of habitat areas and individual species, if applicable;
- Storage and use of fuels and hazardous substances, including spills;
- Waste management.

7.1 Environmental Management Targets

The environmental management targets for the project are as follows:

Table 7: Environmental Management Targets

Targets	Measurable	Methodology	Responsibility	Timescale
Achieve zero incidents of contamination to ground water from concrete works	Incidents, site inspections, quarterly audits, complaints	O'Reilly Concrete Limited procedures to be followed when working with concrete and washing out concrete chutes	Site Management Team	Start to Completion
Ensure sediment on roads is cleared	Raise needs for road cleaning duties during wet or busy periods	Ensure roads are swept and cleaned on a regular basis. Road conditions within the site should be kept clean at all times.	Site Management Team	Start to Completion
Generate <9.5t C&D waste per 100m ² (gross internal floor area)	Lean Construction Techniques, segregation more, reuse more (waste hierarchy)	Purchase less, ensure packaging is removed by supplier where possible and other materials reused & recycled	Site Management Team	Start to Completion
Lower fuel and oil spillages from site activities. Bunds to be used with all fuels and oils	Environmental Incidents, spills contained in bunds	Ensure that drip trays are used at all times under static plant, when refilling, & storing, ensure fuel storage areas are bunded.	Site Management Team	Start to Completion
Ensure correct disposal of all hazardous wastes	Waste segregation, waste costs	All hazardous wastes to be disposed as per Irish Legislation and O'Reilly Concrete Limited requirements	Site Management Team	Start to Completion
Ensure no incidents of pollution to water	Water monitoring and sampling activities. Environmental Incident.	Sediment controls to be used, no waters to be discharged to any controlled waters or drainage systems without approval. Work with CIRIA guidelines and apply O'Reilly Concrete Limited precautionary measures	Site Management Team	Start to Completion
Lower consumption of materials and fuel on monthly basis (relative to project revenue)	Smart meters, energy bills, service costs	Ensure all energy using equipment is switched off when not in use. Select best value for money providers where possible	Site Management Team	Start to Completion
Reduce site electricity by 2.5% on monthly basis	Smart meters, energy bills, service costs	Ensure all energy using equipment is switched off when not in use. Select best value for money providers where possible	Site Management Team	Start to Completion

(relative to project revenue)				
Lower emissions of dust, smoke and fumes during works	Air quality, dust particle increase	Ensure all equipment is well serviced and maintained. Switch of equipment when not in use. Use dust suppression techniques when applicable	Site Management Team	Start to Completion
Reduce amount of Public complaints	Complaints received to Site Management Team	Ensure when works which will impede public access are taking place, all residents are informed for the timescale (where applicable) and all restrictions are kept to a minimum	Site Management Team	Start to Completion
Minimise water Usage consumption	Water charges, Wastewater disposal (discharge volumes)	All grey water to be reused on site where possible. 'Fresh' water supply to be kept to a minimum where possible. TBT-12 Water on Construction Sites	Site Management Team	Start to Completion
Minimise risk of Aspergillus	Air quality, dust particle increase	National Guidelines for the Prevention of Noncomial Invasive Aspergillus during Construction/Renovation activities on Aspergillus Control will be adhered to	Site Management Team	Start to Completion
Minimise airborne & ground borne noise	Noise triggers Breached (where applicable)	All construction noise limits set out in the requirements will be adhered to.	Site Management Team	Start to Completion
Minimise vibration	Vibration triggers breached (where applicable)	All vibration limits set out in the works requirements will be adhered to.	Site Management Team	Start to Completion
Ensure no vehicle movement and material placement does not cause damage to flora and fauna	Correct habitat protection used. Wildlife surveys where applicable	All fauna/animal species to be untouched where possible. Professional advice to be sought on removal procedures	Site Management Team	Start to Completion

The standard environmental management goals for the project are to:

- Conduct all activities in accordance with the:
 - Company environmental policy and procedures;
 - Relevant statutory regulations and provisions;
 - Contractual requirements with the client; and
 - Requirements of relevant authorities;
- Minimise adverse environmental impacts during construction;
- Enhance natural environments during the course of construction, where practical;
- Reduce the significance of our aspects and impacts through our working methods;
- Increase subcontractor awareness of our EMS;
- Increase company awareness of sustainability issues.

O'Reilly Concrete Limited has established company environmental and sustainability targets which are documented in the 2020 Environmental Year Plan. These targets include;

20% reduction of total construction waste (relative to total revenue) compared to 2015.

- 10% reduction of the relative CO2 emissions (total CO2 per total revenue) compared to 2015;
- Achieve >98% recovery rate for all C&O waste;

- < 1 reported environmental incident annually. Achieve zero spillages to water courses;
- < 6 reported environmental complaints annually;
- All sites to achieve 92% pass rate in environmental audits;
- ≤ 9.0t C&D waste generated per 100m² (gross internal floor area) *Target only applicable to building sites.

In order to help achieve these targets, the below table highlights compliance tools.

7.2 Initiatives to Achieve Targets

Table 8: Initiatives to achieve targets

Sites	Area	Objectives and targets	Method for achieving	Assistance by HSE Dept. (method)	Responsibility
All Sites and Offices	Waste	Eliminate waste sent to landfill	Adhere to the waste hierarchy. Lean construction techniques	EA-30 Excavated materials on site (<i>Article 27 Notification Forms</i>). CIRIA documents on Lean Construction	Site Teams and HSE Dept.
		Increase site Segregation of construction waste by 10%	Additional recycling skips on site Increase staff knowledge and participation	EP-16 waste definitions and classifications, TBT-03 Managing Waste, TBT-02 Environmental Awareness, EB-11 Site Set up	Site Teams and HSE Dept.
		Increase site Segregation of construction waste by 10%	Increase site awareness of improved waste management practices	Waste posters, environmental alerts and bullets to be issued focusing on new waste strategies	Site Teams and HSE Dept.
All Sites and Offices	Energy	SMART Meters for all sites	SMART meters installed in cabins	Advice on installation and data collected	Site Teams and HSE Dept.
		Reduce CO2 emissions by 4%	Implement an energy reduction initiative in sites and offices	Environmental information to be issued focusing on new waste strategies	Site Teams and HSE Dept.
		Temperature control in cabins	Thermostats installed	Advice on installation and data collected	Site Teams and HSE Dept.
		Energy initiatives	SEAI Initiatives	Online calculation tools (energy) Energy posters Relatively paperless sites	HSE Dept IT Dept.
		Reduction in fuel usage/air emissions	Car Purchasing	Procurement of low emissions vehicles by Plant Department. Video	Site Teams and HSE Dept

				conferencing capabilities in Offices to cut down on travel times, emissions.	
All Sites and Offices	Auditing and Performance	All sites to achieve 'Pass' mark from quarterly audits >91%	Quarterly Audits	Regular environmental information and directions to be issued to the sites	Site Teams and HSE Dept
		Appraisal system for environmental performance	Subcontractor Appraisal System (COINS)	Detailed information of the systems and scores circulated to all.	Site Teams and HSE Dept

8. Environmental Control Measures

Control measures will be implemented both on an activity specific basis for the area of works, and independently of any specific activities as part of the general site management. Throughout this section reference may be made to standard procedures contained in the Environmental Procedures Manual that will be adopted on site. The Environmental Procedures are available on SharePoint.

The project will be developed in accordance with the control measures and with reference to the following guidance documents:

- BRE (2003) Control of dust from construction and demolition activities;
- BS 5228-1: 2009+A1:2014 CoP for Noise and vibration control on construction and open sites: Part 1: Noise;
- BS 5228-2: 2009+A1:2014 CoP for Noise and vibration control on construction and open sites: Part 2: Vibration;
- BS 5837: 2012 Trees in relation to design, demolition and construction works;
- BS8895-1:2013 Designing material efficiency in building projects Part 1: CoP for strategic definition;
- CIRIA 741 (2015) Environmental Good Practice On Site (Fourth Edition);
- CIRIA 532 (2001) Control of Water Pollution from Construction Sites – Guidance for consultants and contractors;
- IFI (2016) Guidelines on Protection of Fisheries during Construction Works in adjacent to Waters;
- Fisheries Guidelines for Local Authority Works (Department of Marine and Natural Resources, 1998).

Other guidance documents may be referenced for specific issues throughout this section. Copies of these documents are held by the Company Environmental Coordinator and on SharePoint.

The control measures and monitoring requirements listed in this section must be implemented throughout the project.

8.1 Water Pollution Control

All watercourses that are potentially impacted by the works are identified on the site maps included in Appendix 4.

8.1.1. Water Pollution Control Measures

The potential for the construction works to have an impact on the quality of the local watercourses will be minimised through the implementation of the following control measures, which have been developed with reference to the guidance contained in EP-10 Surface Water Control, EP-13 Bulk Fuel & Oil Storage, EP-14 Storage & Handling of Hazardous Substances and EP-15 Containing & Cleaning Up Spills and the IFI (2016) Guidelines on Protection of Fisheries during Construction Works in adjacent to Waters.

Control measures to be implemented include;

- Contact will be maintained with the relevant authority such as the Inland Fisheries Ireland when required;
- Special attention will be paid to minimising the opportunities for wash-off of inert solids (usually from exposed soil mounds, embankments or excavated trenches etc.) from entering watercourses. Silt traps and interceptors will be used where necessary;
- Care will be taken to avoid interference with the supply or quality of any groundwater resource;
- Waste products associated with the works will not be permitted to enter watercourses adjacent to the works through the use of French drains, petrol interceptors or other agreed methods;
- Water that is high in solids or contaminated with cement or oil, will not be pumped from excavations directly to watercourses without pre-treatment (e.g. sedimentation/filtration and oil separation);

- All site run-off associated with the construction will be directed to storm control areas or tanks to prevent direct discharge into the river;
- All operational machinery used in-stream will be kept to an absolute minimum;
- Spill kits will be provided at all river locations identified;
- Fuels, oils, greases and hydraulic fluids will be stored in bunded compounds well away from watercourses. Refuelling of machinery, etc. must be carried out in bunded areas. Fuels will be stored during the construction phase in bunded fuel storage tanks with a 110% holding capacity. Where it is necessary to dispense fuels on site, this will be undertaken in areas covered with an impermeable surface to protect surface water and ground water;
- Construction works, especially ones involving the pouring of concrete, will be conducted in the dry. Precast concrete will be used in preference to uncured concrete, which kills aquatic fauna through alteration of stream pH. When cast-in-place concrete is required, all work will be done in the dry and allowed cure for 48 hours before re- flooding;
- To help prevent the contamination of the ground and groundwater, contaminated materials (oils, fuels, chemicals etc.) will be used and stored in an appropriate manner as outlined in the relevant guidance, i.e. CIRIA (2001) and DMRB Volume 11 (1994).

8.1.2. Water Quality Monitoring

8.1.3. Water Pollution Incidents

Should any monitoring or inspection indicate that pollution of the site or adjacent watercourses has occurred then the Site Management Team will immediately inspect all work activities to ascertain whether they are operating effectively. All works may be stopped and/or additional control measures installed to prevent further pollution or discharge to the watercourse. Appropriate action will be taken in consultation with the Site Agent. Water samples will be taken at the watercourse if required. The incident will be logged in the Incident Register.

8.2 Noise & Vibration Control

The primary sources of noise and vibration associated with the contract have been identified as follows:

- 2 Fixed monitors on site for noise and vibration.

Noise criteria used for assessing the significance of construction impacts are as follows:

Period	Hours	Ambient Noise Level, Leq Measured on Site (Db(A))	Period of Hours Over Which Leq, Is Applicable	Maximum Allowable Sound Level on Site (Db(A))
Days	0800 – 1700	75	1 hour	85
Evening	1700 – 2200	60	1 hour	65
Weekends	0800 – 1300	70	1 hour	80

These levels apply at 1m from the façade of neighbouring noise sensitive buildings.

Frequency	Vibration Limit	Intervention Value
<10 Hz	8mm/s	6mm/s
10 to 50 Hz	12.5mm/s	10mm/s
50 to 100 Hz	20mm/s	16mm/s

All works are scheduled to be completed within 7 to 6pm as specified in the contract.

Best practicable means should be employed to minimise noise levels, in accordance with the British Standard BS 522: 2009+A1:2014. Noise and vibration control on construction and open sites (Parts 1 and 2) for basic information and procedures for noise and vibration control. A copy of this standard is available at the site or from SharePoint.

8.2.1. Noise & Vibration Control Measures

Noise reduction measures will be undertaken in accordance with the Procedure EP-09

Noise and Vibration Control, which has been developed taking into account the requirements of BS 5528, particularly Section 10, and include:

- Adhere to working hours;
- Keep noisy plant away from public areas;
- Use local screening when necessary;
- Use silenced generators and equipment;
- Keep acoustic doors and hoods on plant closed.

8.2.2. Noise and Vibration Monitoring

Datum noise monitors installed on site – readings issued by email to site team weekly.

8.2.3. Noise and Vibration Incidents

Should any monitoring indicate that noise or vibration levels have exceeded the intervention values then the plant or equipment causing the noise/vibration will be powered down immediately. Appropriate action will be taken in consultation with the Site Agent to reduce the noise and/or vibration levels. Actions may include:

- Servicing and or modifying the plant/equipment;
- Replacing the plant/equipment;
- Moving the operation away from sensitive receptors;
- Rescheduling the activity;
- Erecting noise barriers where other measures are not practical.

When noise and vibration monitoring is taking place, all monitors should take into account the background noise and situation when monitoring. External noise and vibration reports to reference to this fact also.

The incident will be logged in the Incident Register if levels have been breached and background noise was deemed not a factor at the time of the occurrence.

8.3 Air Pollution Control

The main types of air pollution that will result from the works are dust and exhaust emissions from combustion engines, and plant machinery and vehicles. Activities with the potential to produce dust are:

- Demolition works;
- Plant and vehicle movement;
- Bulk materials handling;
- Stockpiles;
- Vehicle movement off site;
- Drilling/grinding/cutting.

8.3.1. Dust Minimisation Plan

Dust will be minimised on site through the implementation of the following control measures developed in accordance with the Procedure EP-08 Air Pollution Control:

- Water suppression;
- Eire Data collecting samples on site weekly for Aspergillus Monitoring;
- Tank on consaw and cutting equipment;
- Road sweepers;
- Dampen dry areas;
- Dampening materials going off site and using debris netting;
- Water suppression on demolition plant;
- Knapsack sprayers.

8.3.2. Other Air Quality Control Measures

- Exhaust emissions where practical will be minimised by ensuring that all plant, equipment and vehicles are in good working order and regularly serviced to ensure efficient running, by using the smallest engine-sized plant and equipment suitable for the task and by ensuring that engines are not left idling unnecessarily;
- Burning of materials on site will not be permitted.

8.3.3. Dust monitoring

- All rubbish skips will be fitted with nets during windy conditions to prevent rubbish and debris blowing over the site into adjoining properties. Skips will be promptly removed from site when full;
- Public roadways and footpaths adjacent to the site will be inspected daily and their condition closely monitored. The results of these inspections along with the nature of works on-going on the site at the time will dictate the extent of road cleaning required. A road sweeper will be utilized as required;
- O'Reilly Concrete Limited always operate a clean as you go policy.

8.4 Habitat (Flora & Fauna) Protection

Generally ecological mitigation measures are incorporated into the project design and the requirement during the construction stage is to ensure that all mitigations are fully implemented. Additional measures may be implemented during construction to limit additional habitat and fauna disturbance outside the area of works as listed below.

All work activities will comply with the Environmental Protection Agency Act 1992 and Wildlife Act 1976 and amendments 2000 to 2010 and the European Communities (Birds and Natural Habitats) Regulations 2011.

8.4.1. Construction Mitigation Measures

Control measures will be implemented in accordance with EP-12 Habitat, Flora and Fauna Protection.

8.4.2. Fish and Fisheries Habitat Mitigation Measures

Refer to the mitigation measures in section 8.1 for water pollution.

Additional measure to mitigate potential pollution to fish and fisheries habitat are as follows

8.5 Waste Management (Including Hazardous Waste)

A Waste Management Plan will be instituted during the works and the waste management measures for the Project are detailed in this separate document, which includes:

- Waste management targets;
- The potential waste materials produced during the project;
- Waste handling procedures;

- Waste Permits required;
- Waste reuse, recycling and disposal techniques;
- A map showing designated waste handling areas.

The Waste Management Plan also covers the handling and disposal of hazardous wastes such as asbestos, fuels and used absorbent materials.

With regard to potential nuisance from temporary site offices and canteen, the following measures will be observed:

- Site offices will be maintained in a tidy condition;
- Litter will be cleaned up daily, particularly around skip bins, in accordance with EP-19 Litter Management.

8.6 Hazardous Materials Handling & Storage

During the works there will be a requirement for the use of hazardous substances, including but not limited to:

- Fuel oil;
- Diesel;
- Hydraulic oil;
- Shuttering oil;
- Liquid cement;
- Concrete curing agent.

The management of such substances will be carried out in accordance with the procedures for:

- Bulk Fuel and Oil Storage (EP-13);
- Storage and Handling of Hazardous Substances (EP-14);
- Containing and Cleaning Up Spills (EP-15).

All chemicals not covered by EP13, EP14 and EP15 will be managed in accordance with the requirements of the relevant safety data sheet (SDS) and the Health and Safety Plan.

- Hazardous materials are kept in lockable stores at site compound locations. Spill kits are also kept at these locations. Any hazardous materials must be returned to the stores at the end of each day and not left on site;
- Oil and fuel will be stored in bunded areas and will be stored well away from any water discharge point or, where not possible, the discharge point will be adequately protected to prevent spills from entering;
- Diesel pumps, generators or similar will be placed on impervious drip trays to capture minor spills and leaks and located at least 10m from any water discharge point;
- Tools and equipment will not be washed in or near any watercourses and if undertaken on site wash water will be directed to appropriate retention controls and not allowed to directly enter any watercourse.

Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access and provided with spill containment. Fuelling and lubrication of equipment will not be carried out in the vicinity of water discharge points. Waste oils and hydraulic fluids will be collected in leak-proof containers and transported off-site for disposal or recycling at appropriately licensed facilities.

8.7 Vermin Control

Control measures associated with vermin are as follows:

The control of vermin in and around the site compound site canteens, washrooms etc is carried out by a specialist vermin control company Pestguard. Bait boxes are established and regularly replenished ensuring maximum protection from vermin.

8.8 Landscape

Landscape measures will be implemented in accordance with the Landscape Design required by the contract, to be prepared by the Designer.

8.9 Archaeology

N/A

9. Management Review

The implementation of the EMP is reviewed monthly on site at the internal site meetings. These meetings are attended by site management and by personnel responsible for the implementation of the EMP. During the meeting all aspects of the environmental management are considered, including:

- Upcoming work;
- Environments risks foreseen;
- Control measures for the protection of the environment;
- Internal and external audit results;
- Inspection and monitoring results;
- Environmental alerts and bullet-ins;
- Any issues raised by site staff or in relation to environmental management;
- Site goals and targets;
- Control measures for protection of the environment;
- Any other significant issues.

Changes are made to the on-site management as required to achieve a continual improvement in environmental performance.

Environmental issues will be brought to the attention of the workforce through toolbox talks and through the Monthly HSE Meeting.

The EMP itself shall be reviewed at least every three months by the Site Management Team to ensure that it continues to be adequate and effective and changes made as required. Any changes shall be made by the Site HSE Officer and a new revision of the EMP issued to all personnel on the circulation list on page 1 of this document.

10. Training and Competence

The environmental management goals and strategy shall be communicated to all staff and contractors at the safety and environmental induction. All employees and contractors are required to undertake a site induction prior to conducting any work on site (for further details refer to the Health and Safety Plan) and employees shall be made aware of their responsibilities in accordance with this management plan. A record of inductions shall be kept by the Safety, Health & Environmental Officer.

Toolbox talks will be conducted with relevant employees on various aspects of the environmental management plan, activity control measures and environmental procedures. Three toolbox talks on environmental or waste issues must be conducted per quarter.

Toolbox talks shall be conducted by the Site HSE Officer, Section Engineers or others nominated by the Site HSE Officer. The schedule for toolbox talks shall be at the discretion of the Site Management Team and additional toolbox talks will be given in response to complaints, or where the particular environmental risks have been identified.

Table 9: Recommended Toolbox Talks

Toolbox Talk Topic	Reference Material	When*	Recipients
Environmental Management	Environmental Policy, EMP, Environmental Procedures Manual	Commencement of Site Activities	All Site Crews
TBT 01	Hazardous Substances	Regular Intervals	All Site Crews
TBT 02	Environmental Awareness	Regular Intervals	All Site Crews
TBT 03	Managing Waste	Regular Intervals	All Site Crews
TBT 04	Spill Control	Regular Intervals	All Site Crews
TBT 05	Waste Pollution Prevention (Fuel & Oil)	Regular Intervals	All Site Crews
TBT 06	Silt Management	Regular Intervals	All Site Crews
TBT 07	Fire	Regular Intervals	All Site Crews
TBT 08	Storage of Hazardous Waste on Site	Regular Intervals	All Site Crews
TBT 09	Japanese Knotweed	Regular Intervals	All Site Crews
TBT 10	Chemical & Fuel on site	Regular Intervals	All Site Crews
TBT 11	Trees	Regular Intervals	All Site Crews
TBT 12	Water on Construction Sites	Regular Intervals	All Site Crews
TBT 13	Dust and Air Quality	Regular Intervals	All Site Crews
TBT 14	Noise and Vibration	Regular Intervals	All Site Crews
TBT 15	Archaeology	Regular Intervals	All Site Crews
TBT 16	Working in previous developed areas	Regular Intervals	All Site Crews
TBT 17	Pumping and over pumping	Regular Intervals	All Site Crews
TBT 18	Water pollution - cement and concrete	Regular Intervals	All Site Crews
TBT 19	Material handling and housekeeping	Regular Intervals	All Site Crews
TBT 20	Washing down plant and equipment	Regular Intervals	All Site Crews
TBT 21	Energy conservation - electricity and fuel	Regular Intervals	All Site Crews
TBT 22	Bentonite	Regular Intervals	All Site Crews
TBT 23	Be a good neighbour	Regular Intervals	All Site Crews
TBT 24	Sustainability	Regular Intervals	All Site Crews
TBT 25	Eco driving	Regular Intervals	All Site Crews
TBT 26	Fuel efficiency	Regular Intervals	All Site Crews
TBT 27	Material handling and storage	Regular Intervals	All Site Crews
TBT 18	Water pollution - cement and concrete	Regular Intervals	All Site Crews
TBT 19	Material handling and housekeeping	Regular Intervals	All Site Crews
TBT 20	Washing down plant and equipment	Regular Intervals	All Site Crews

TBT 21	Energy conservation - electricity and fuel	Regular Intervals	All Site Crews
TBT 22	Bentonite	Regular Intervals	All Site Crews

Appendix 1: Table of Requirements for ISO14001:2015

Ref	ISO14001:2015	EMP	Section
5.2	Environmental Policy	Company Environmental Policy	Appendix 5
6.1.2	Environmental Aspects	Environmental planning, aspects and control Site Environmental Risk Assessment	5 5.1
6.1.3	Compliance Obligations	Relevant Statutory Provisions	6.5
		Contract Requirements/ERA	Appendix 2 & 3
6.2 6.2.1 6.2.2	Environmental Objectives and Planning to Achieve them	Environmental objectives and targets	7
5.3	Organizational Roles, Responsibilities and Authorities	Organisation & Responsibilities	2.1 2.3
7.2 7.3	Competence and Awareness	Training and Competence	10
7.4	Communication	Environmental Management Arrangements Communication	3 2.3
7.5.3	Control of Documented Information	Control of Documents	6.7
8.1	Operational Planning and Control	Environmental Control Measures	8
8.2	Emergency Preparedness and Response	Summary of Emergency Procedure	4
9.1	Monitoring, Measurement, Analysis and Evaluation	Environmental Management	3.1
9.1.2	Evaluation of Compliance	Environmental Compliance Requirements	6
10.2	Nonconformity and Corrective Action	Environmental Incidents	3.2.2
9.2	Internal Audit	Environmental Management	3.1
9.3	Management Review	Management Review	9

Appendix 3: Environmental Risk Assessment Report

Attached in separate document.

Appendix 4: Site Map/s

Appendix 5: Environmental Policy