Cosgrave Developments

Blackwood Square, Northwood, Santry Demense, Dublin 9

Planning Application to An Bord Pleanala

Outline Construction Environmental Management Plan

November 2019

BARRY & PARTNERS
consulting engineers

CIVIL • STRUCTURAL • ENVIRONMENTAL • TRANSPORTATION

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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 process are effectively managed during construction, commissioning and handover of the project, and that appropriate mitigation, monitoring, inspection and reporting mechanisms are implemented.

An EIAR has been submitted with the Planning Application and was tasked with considering the impact of the proposed project. Mitigation has been proposed to reduce impacts where they have been predicted.

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 Contractor (in association with the Employers Representative), 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 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.

Objective /Principal	Description
	Minimise the risk of pollution by ensuring all mitigation measures are implemented and effective.
	Construction activities are undertaken in accordance with national/international legislation.
	Effective waste management techniques are adopted on site as per Waste Management Plan.
	Develop and maintain an Environmental Incident Response Procedure and ensure adequate spill response. Spill kits are available on site.
Construction work is carried out with minimal disturbance to landowners and the local community.	Minimise potential for noise and vibration, traffic and dust impacts by ensuring all mitigation measures are implemented and plans are adhered to.
	Minimise disruption to local road users through effective management of traffic and construction related haulage in line with contract specific Traffic Management Plan.
	Keep sites clean and tidy at all times.
	Respond to any local concerns regarding construction activities.
	Report on environmental performance of construction activities.
Construction work is carried out with minimal impact on archaeology.	All features of archaeological interest to be treated in accordance with the defined mitigation measures.
Adopt a sustainable approach to construction.	Minimise use of natural resources and source materials locally where possible.
	Minimise resource wastage and reuse materials where possible.
	Ensure a policy of reuse and recycling is adopted on the project.
	Ensure energy efficiency is considered when operating plant and machinery and running site offices and compounds.
Provide adequate environmental awareness for all project personnel	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.
	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.

1.2 Contract Specific CEMP

A more detailed contract specific CEMP will be prepared on award of the project contract.

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 ,and planning conditions are fully implemented under the construction contract in accordance with the Project Approval. The contract specific CEMP 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 Contract Specific 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 is necessarily a “live” document which will be revised regularly. It is expected that amendments to the CEMP 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 DESCRIPTION AND CONSTRUCTION ACTIVITIES

2.1 Proposed Development

The proposed development will consist the construction of 4 No.7-storey plus penthouse apartment blocks containing 331 No. apartment units, a multi-function area (c.133sq.m), a gym (c.140sq.m), a childcare facility (c.224sq.m), a concierge (c 81.5sq m) in Block A, 5 No. ground floor mixed use commercial units with a total area of c. 939sq.m; associated car parking (including 334 resident spaces at basement level), 760 No. bicycle storage spaces, 5 No. motorbike spaces, refuse storage, substation, landscaped public open space; network of pedestrian and cycle paths tying in with existing pedestrian and cycle paths on Northwood Avenue with access points along the south, north east and west boundaries of the site; and associated drainage arrangements, landscaping and site development works, all on a site of c. 2.119h.

Phasing

It is intended to carry out the proposed development in a single phase. Construction may take up to 3 years to complete. The main stages of construction will proceed in a general sequence as follows:

- Enabling Works including set-up of site construction facilities
- Service diversion works;
- Site clearance will include cut and fill of existing ground profiles and formation of basement excavation;
- Construction of drainage, water supply and utility service distribution network within the site;
- Construction of basement car park and podium/transfer slab at ground level
- Construction of multi-storey apartment blocks
- Roads, landscaping and paving
- Building fit-out and commissioning.

Working Hours

This plan will include the permitted site operation hours which are expected to be 07:00-19:00 on weekdays and 09:00-13:00 on Saturdays with no works on Sundays or bank/public holidays in accordance with the Environmental Noise regulations 2006

Construction Site Access

Pedestrian access will be strictly controlled. Only Safepass accredited personnel will be permitted on site and daily in-out attendance records will be maintained. Safe pedestrian access points will be provided based on the stage of works and layout of the construction site.

Construction traffic will access the site via the existing access off Affidea Northwood Road so as to minimise disruption on other routes. The routing will be strictly managed and controlled, and details will be incorporated into the traffic management plan.

A site compound will be provided adjacent to the development site to the north. Construction car park will be accommodated within the site compound.

Structural Works

A geotechnical investigation was undertaken by Ground Investigation Ireland Limited in February 2019. The main findings established a stiff layer of black boulder clay at approximately 2.0-2.5m below ground level throughout the site and the water table was not encountered in any trial pits or boreholes at a depth of 7.5m.

The construction of the basement will involve excavations to an approximate depth of 4.0m below existing ground level and the removal of approximately 47,000m^3 of excavated material from site.

All foundations will be founded on the stiff layer of black boulder clay and will consist of reinforced concrete pad footings to columns and strip footings to all retaining, core and stairwell walls.

The basement structure will be constructed with reinforced concrete perimeter retaining walls and reinforced concrete basement slab on concrete blinding on boulder clay. All columns and load-bearing walls at basement level to the underside of ground floor/podium level will be reinforced concrete and all non-loadbearing partition walls will be 215 solid blockwork.

All apartment blocks will be constructed on reinforced concrete transfer slabs at ground floor level to transfer all upper level loadings into basement columns.

Upper floors will consist of precast floor structures supported on load-bearing blockwork. Blockwork strengths will vary throughout each floor level. The precast floors will consist of hollowcore units with a reinforced structural screed.

Balconies will be fabricated in galvanised structural steel frames supported on external steel columns and fixed back to the main concrete structure with steel stub brackets.

It is envisaged that four tower cranes will be erected on site for the duration of the construction period.

Drainage Works

The foul and storm sewer networks will be on the separate systems. No foul effluent will discharge to the storm water system.

Foul sewer construction will comply with Fingal County Council and Irish Water's requirements, specification and standard details.

Irish Water has confirmed that there is capacity in their wastewater infrastructure to cater for this development without upgrades - refer to the IW Confirmation of Feasibility Statement a copy of which is included in Appendix 1 of the Water Services Report.

Details of the proposed surface water network and the proposed SuDS (Sustainable Urban Drainage Systems) measures for this development are shown on drawings 19205-JBB-00-XX-DR-C-01001 Rev P1, 19205-JBB-00-XX-DR-C-01002 Rev P1 and 19205-JBB-00-XX-DR-C-01007 Rev P1.

SECTION 3: ENVIRONMENTAL MANAGEMENT FRAMEWORK

3.1 Employer

Cosgrave Developments are 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

J. B. Barry and Partners are the Employers Representative (ER) responsible for monitoring compliance with the CEMP. The Employers Representative will appoint temporary or permanent Specialists as required.

3.3 The Contractor

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

3.4 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:

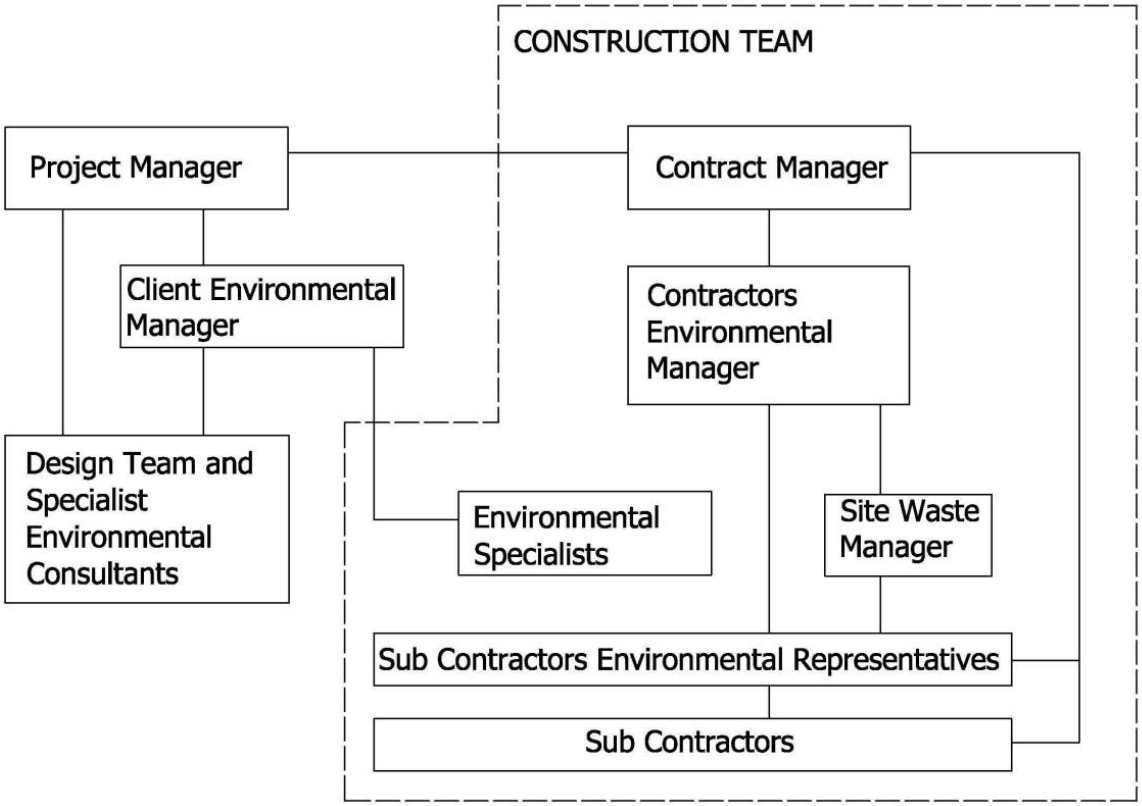
- Preparing, maintaining and ensuring implementation of the CEMP;
- Conducting regular environmental inspections and audits as per the frequency specified in the Contract and checking adherence to the mitigation measures of the CEMP;
- Helping to ensure that works are constructed in accordance with the 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 planning 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 the ER) 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 –Meetings

In order to provide for effective coordination of environmental monitoring and management, the Employer's Representative will arrange for regular meetings (every three months) to be attended by:

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

These meetings will be held on site at the site Office.

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.

4.3 Monitoring, Inspections and Audits

4.3.1 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.

4.3.2 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.

4.3.3 Audits

The ER may arrange (if required) 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 contactor. 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 Corrective Action Report 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.

4.4 Environmental Incident Response and Investigations

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

The ERP 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 ERP 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.

4.5 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 CEMP is updated accordingly.

4.5.1 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.

4.6 Reporting

4.6.1 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).

4.6.2 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).

4.7 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 requested):

- 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: GENERAL ENVIRONMENTAL MANAGEMENT MEASURES

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.

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

Table 5-1: General Construction Management Measures

Topic	Management Measure
Construction Impacts General CEMP	A detailed *Construction Environmental Management Plan* (CDEMP) will be prepared by the selected contractor prior to work commencing on site. The main purpose of a CEMP is to provide a mechanism for implementation of the various mitigation measures which are described in this EIAR and contained within this *Outline Construction Environmental Management Plan.* The CEMP will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, *Environmental Good Practice on Site*, CIRIA 2005, as well as the Outline CEMP document. The CEMPs shall have individual project specific Management Plans appended relating to Waste Management, Invasive Species Management, Traffic Management, Monitoring Plans, and Environmental Incident Response Plans. Any planning conditions imposed by the planning authority shall be strictly observed and monitoring requirements shall be observed as conditioned.
Guidance Documents	▪ Measures set out in the Construction Industry Research and Information Association (CIRIA) on Control of Water Pollution from Construction Sites: Guidance for Consultants and Contractors Volume 532 shall be adhered to by the Contractor ▪ The Guidelines entitled “Requirements for the Protection of Fisheries Habitats during Construction and Development Works at River Sites” prepared by the Eastern Regional Fisheries Board shall be adhered to in full by the Contractor.
Emergency Response Plan	A contract specific Emergency 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.
Contact Details	Details of site managers, contact numbers (including out of hours) shall be listed on public information signs (including warning signs) at the entrance and, where appropriate, at the boundaries of the site.
Fuel / Chemical Handling	▪ All potentially harmful substances will be stored in compliance with the handling instruction, including separation of incompatible chemicals, provision of adequate firefighting, spill containment and other safety facilities. ▪ The Contractor will ensure that adequate means (Spill Kits) to absorb or contain any spillages of these chemicals are available on site at all times. Any waste or hazardous waste residuals or potentially contaminated sludge from spill clean-up shall be stored in appropriate receptacles or containers, or in bunded storage areas prior to their removal by an EPA licensed contractor. ▪ Any handling of hazardous chemicals shall be in compliance with the relevant safety instructions and legislation (Safety, Health and Welfare at Work Act 2005 (S.I. No. 10 of 2005) and the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001 (S.I. No. 619 of 2001) and the Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. No 299 of 2007) and amendments). ▪ A Safety Data Sheet will be available, as well as an assessment of the hazards associated with the chemical (to personnel, for storage, for emergency response).
Fuel / Chemical Handling	▪ 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 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	Any discharges arising from the construction phase shall incorporate silt removal and hydrocarbon

Topic	Management Measure
waters	removal using a hydrocarbon interceptor (which will comply with current European Standard EN858).
Sewage Management	Foul sewage shall be removed off site and disposed of by discharging to a licensed sewer network by the Contractor. Any discharges arising from the construction phase of the proposed scheme entering the foul/storm sewer network will be in accordance with the requirements of a discharge licence (if required) granted by Fingal County Council.
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

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

The mitigation commitments contained in the 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.

6.1 Population and Human Health

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 CEMP 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

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 "*Pest minimisation Best practice for the construction industry"* guidelines or a similar appropriate standard.
Human Health	During the construction phase, the legal duties under the Construction Regulations (Safety, Health and Welfare at Work (Construction) Regulations 20135) will be adhered to;
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 "*Pest minimisation Best practice for the construction industry"* guidelines or a similar appropriate standard.

6.2 Terrestrial Biodiversity Management

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. No Invasive Species have been identified in the areas where the Contract relating to the current application will be undertaken.

Table 6-2: Terrestrial Biodiversity Management Measures

Topic	Management Measure
Breeding birds	In order to avoid disturbance of breeding birds, their nests, eggs and/or their unflown young, all works involving the removal of trees or hedgerows will be undertaken outside of the nesting season (1st March to 31st August inclusive). **Or where this seasonal restriction cannot be observed then:** A breeding bird survey will be undertaken during the appropriate survey season (between early March and late June) by an ecologist with experience undertaking breeding bird surveys in order to confirm whether birds are nesting within suitable habitat affected by or immediately adjacent to the subject lands. Should nesting birds be encountered during surveys, the removal of trees or hedgerows may be required to be delayed until after the nesting season (1st March to 31st August inclusive).
Bats	The following mitigation measures are proposed to ensure compliance with legislation within the Wildlife Acts 1976-2012 which protects bats and their roosts: Two trees located within the proposed development site contained suitable features for roosting bats. If these trees are scheduled for removal at any stage of the development, as a precautionary measure, it is recommended that the potential bat roost trees are inspected by an experienced ecologist for the presence of bats. They will then be section-felled using controlled rigging under the supervision of an experienced

Topic	Management Measure
	ecologist. If bats are present, the relevant works will have to cease and NPWS will have to be contacted in order to obtain a derogation licence. Lighting proposals for the construction phase will adhere to the advice provided in Bats and lighting – *Guidance for Planners, Engineers, Architects and Developers* (Bat Conservation Ireland 2010), *Guidance Notes for the Reduction of Obtrusive Light GN01* (Institute of Lighting Professionals, 2011) and *Bats and Lighting in the UK – Bats and the Built Environment Series* (Bat Conservation Trust UK, January 2008). Construction and operational stage lighting details shall be reviewed by a qualified bat ecologist. If necessary, the bat ecologist shall recommend adjustments to directional lighting (*e.g.* through cowls, shields or louvres) to restrict light to those areas where it is needed with a light level of 3 lux or less at ground level.
Hedgerows	The sections of remaining hedgerow will be kept intact and planted with a range of native species. This will prevent further deterioration of the habitat. The remaining sections of the existing hedgerow will be enhanced with a range of native herbaceous and tree/ shrub species. The following mitigation measures are proposed to protect the hedgerow located on the proposed development site and to comply with the Tree Preservation Order granted for the trees within it. These measures will ensure compliance with the legislation within the 1963 Local Government (Planning and Development) Act, section 45, as amended by the 200 Planning Act. In order to preserve the trees to be retained within the hedgerow, the root protection area must be calculated by a qualified arborist. Protective barriers must be installed to exclude construction activities from the root protection area of the trees.
Amphibians	An amphibian check will be carried out by an experienced ecologist prior to works to infill the drainage ditch to ensure that no protected species are present. Should amphibians be encountered during this check, works must be delayed in order to apply for a derogation licence to the NPWS to allow for the disturbance of amphibians.
Surface Water Discharge	See mitigation measures outlined in the Table 6-3.

6.3 Water Management.

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.

Contractor Guidance set out in the Control of Water Pollution from Construction Sites (CIRIA, 2001) shall be adhered to. Good construction management practices will be employed. 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.

Table 6-3: Water Management Measures

Topic	Management Measure
Drainage System	Design to incorporate Sustainable Urban Drainage Systems [SuDS] techniques (stormwater attenuation and Hydrocarbon interceptors) and to be compliant with recommendations of the Greater Dublin Strategic Drainage Study [GDSDS] and Fingal County Council.
Flood Risk Construction	▪ The attenuation storage will be established and the required outlet control to attenuate the discharge flow will be constructed as early as possible in the construction stage. ▪ Runoff from all impermeable areas formed during the construction stage will be directed through the existing storm water storage and attenuated to the greenfield runoff rate.
Protection of Fisheries	The guidelines provided by the Inland Fisheries Ireland (2016) on the protection of fisheries habitats during construction projects will be adhered to.
Control of Water Pollution	Foul drainage from all site facilities will be connected to the public sewer
Control of Water Pollution	Within the site boundary fence, temporary earth bunds will be constructed to contain surface water run-off and channel it to a silt trap or settlement pond before discharge to the drainage network

Topic	Management Measure
Control of Water Pollution	When cast in-place concrete is required, all work must be done in the dry and effectively isolated from any flowing water (or water that may enter rivers or streams) for a period sufficient to ensure no leachate from the concrete. No direct discharges to be made to waters where there is potential for cement or other contaminant residues in discharges. Designated impermeable cement washout areas must be provided.
Control of Water Pollution	Any excavated vegetation, soil and subsoil will be temporarily stockpiled away at least 20 m from any surface water features in order to reduce the likelihood of any suspended solids reaching them. Any soil contaminated from an accidental spillage will be contained and treated appropriately and disposed of in accordance with the Waste Management Act 1996-2012.
Control of Firewater Runoff (operational)	Discharge points to the drainage network will entail a mechanism for containment of runoff. This will be used to contain any contaminated runoff in the event of a major accident on site. In the event of a fire, the shutoff valve will close and the firewater will be contained in the attenuation storage system.

6.4 Noise and Vibration Management

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

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

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

Table 6-4: Noise and Vibration Management Measures

Topic	Management Measure
Noise and Vibration Management	Contractor will compile and implement a Noise and Vibration Management Plan (NVMP) which will address ▪ 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 phase mitigation measures	During the construction phase, the proposal development shall comply with British Standard 5228 “Noise Control on Construction and open sites Part 1. Code of practice for basic information and procedures for noise control.” The BS5228 standards include guidance on several aspects of construction site mitigation measures, including, but not limited to: ▪ selection of quiet and or low vibration emitting plant; ▪ control of noise sources; ▪ screening; ▪ hours of work; ▪ liaison with the public; and ▪ monitoring. If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise

<table>
<tr><th>Topic</th><th>Management Measure</th></tr>
<tr><td></td><td>control “at source”. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier;</td></tr>
<tr><td>Site Compounds</td><td>Site compounds should be located away from noise sensitive boundaries within the site constraints. Lifting of bulky items, dropping and loading of materials within these areas should be restricted to normal working hours;</td></tr>
<tr><td>Construction Noise limit at Sensitive Receptors (Construction Stage)</td><td>
<table>
<tr><th>Period</th><th>Allowable Limit at Nearest Sensitive Receptor (dB L_{Aeq}) Operational Construction Stage</th></tr>
<tr><td>Daytime (07:00 – 19:00) and Saturdays (07:00 – 13:00)</td><td>65dB $L_{Aeq,1hr,}$</td></tr>
<tr><td>Evening (19:00 to 23:00hrs)</td><td>55 dB $L_{Aeq,1hr,}$</td></tr>
<tr><td>Night time (23:00 to 07:00hrs)</td><td>45 dB $L_{Aeq,1hr,}$</td></tr>
</table>
</td></tr>
<tr><td>Noise limit at Sensitive Receptors (Operational Stage)</td><td>Plant noise from the proposed development shall not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public place. In particular, the rated noise levels from the proposed development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial areas”</td></tr>
<tr><td>Operations</td><td>Noise from building services plant will be minimised through the selection of “low noise” equipment where required as well as the incorporation of appropriate attenuation in the form of:
Acoustic enclosures for fans;
Provision of attenuators for fan intake’s; and
Use of acoustic rated doors on all plant rooms or enclosures.
The following mitigation measures will be taken to reduce noise levels arising from the vehicular activity in and around the site:
The design of the site is such that the need for reversing should be minimised in open areas and drivers will be required to adhere to onsite traffic management to reduce the use of reverse sirens.
A speed limit of 20 km/h shall be applicable to all vehicles traversing the site.
Under no circumstances are air brakes to be used by vehicles onsite.
Vehicle horns should not be sounded whilst onsite, except in the event of an emergency.</td></tr>
<tr><td>Noise control measures</td><td>During both the construction and operational phases, mitigation measures will include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring.
For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant should be switched off when not in use and not left idling;
For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system;
For percussive tools such as pneumatic breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker ‘tool’ and ensure any leaks in the air lines are sealed. Erect localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries;
For concrete mixers, control measures should be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum;
For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials;
For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation;
All items of plant should be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures;
Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding (2.4m in height) with a mass per unit of surface area greater than 7 kg/m2 can provide adequate sound insulation;</td></tr>
<tr><td>Vibration Limits.</td><td>Construction activities will be required to comply with the following vibration limits, measured at the nearest noise sensitive receptor:
<table>
<tr><th>Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property (soundly constructed buildings) to the source of vibration, at a frequency of</th></tr>
</table>
</td></tr>
</table>

Topic	Management Measure
	Less than 10 Hz | 10 to 50 Hz | 50 to 100 Hz (and above) **15 mm/s** | 20 mm/s | 50 mm/s
Vibration Limits	In addition, construction activities will be required to ensure that vibration in the vicinity of underground services does not exceed the following: ▪ Maximum Peak Particle Velocity for intermittent or transient vibrations - 30 mm/s; and ▪ Maximum Peak Particle Velocity for continuous vibrations - 15 mm/s.
Communication	The contractor will take a "proactive community relations" stance and will distribute information circulars informing people of the progress of works and any likely periods of significant noise / vibration during construction as required, in line with the construction programme. A designated noise liaison officer will be appointed to site during construction works.

6.5 Dust Management

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 6-5: Dust Management Measures

Topic	Management Measure
Dust Management	▪ A Dust Minimisation Plan will be implemented during the construction phase. ▪ Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions. ▪ Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. ▪ Vehicles delivering material with dust potential (soil, aggregates) will be enclosed or covered with a tarpaulin at all times to restrict the escape of dust. ▪ Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. ▪ Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. ▪ Water bowsers will be deployed within the sites during periods of dry weather to damp down potential dust generation from unbound surfaces.
Dust Management general	Dust mitigation measures will be specified in the CEMP. The Contractor shall ensure that management measures follow the guidelines set out in BE Report 456 Measures to mitigate the emission of dust due to construction activities should include, where appropriate and practicable: ▪ wind breaks and barriers, ▪ frequent cleaning and watering of the construction site and associated access roads, ▪ control of vehicle access, ▪ vehicle speed restrictions, 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 workday
Dust Monitoring	The Contractor will comply with the TA Luft Standards "Technical Instructions on Air Quality Control". Dust levels at the site boundary shall not exceed 350 mg/m^2/day averaged over a continuous period of 30 days.

6.6 Land and Soils and Waste Management

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. 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 contractor. An Outline Waste Management Plan is presented in Section 7.

It should noted that site investigations carried out on the proposed site in 2019 found no evidence of contaminated soils. Based on the site investigations the soils to be excavated and disposed of are classified as inert.

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

Topic	Management Measure
Waste Management Plan	The appointed Contractor will prepare a contract specific Waste Management Plan for the project in accordance with "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects. This will provide details of the exact methods it is proposed to employ to remove soils from the site and will include details of the location and end use of the spoil.
Project Waste Manager	A Project Waste Manager will be appointed by the Contractor to oversee the implementation and adherence to the plan during the construction phase of the project.
Waste Disposal	The waste generated on site will be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2012.
Waste Management	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.
Reuse of Spoil	Soft materials and surplus soils that are excavated will be reused, for bunds, landscaping etc where possible. Material that cannot be re-used will be treated in accordance with the Landfill Directive (2003/33/EC).
Contaminated Material Disposal	▪ All unsuitable (including contaminated soils) material shall be disposed of in accordance with all relevant legislation including the Department of the Environment and Local Government (DoELG) (1996 to 2008), Waste Management Acts, the DoELG (1998) Waste Management (Permit) Regulations and the NRA (2008) Guidelines for the Management of Waste from National Road Construction Project. Material to0 be disposed of will be treated in accordance with the Landfill Directive (2003/33/EC). ▪ All waste shall be removed by waste contractors authorised under the (Waste Management (Collection Permit) Regulations, 2007 and the Waste Management Collection Permit) (Amendment) Regulations, 2008. ▪ The waste collected shall be delivered to authorised waste facilities in accordance with the Waste Management Acts 1996-2012. ▪ Any soil contaminated from an accidental spillage will be contained and treated appropriately and disposed of in accordance with the Waste Management Act 1996-2012.
Hazardous waste	Any waste or hazardous waste residuals or potentially contaminated sludge from spill clean-up shall be stored in appropriate receptacles or containers, or in bunded storage areas prior to their removal by an EPA licensed contractor.

6.7 Archaeology and Cultural Heritage Management

Management measures relating to the cultural and heritage environment are listed in Table 6-7 below.

Table 6-7: Archaeology and Cultural Heritage Management Measures

Topic	Management Measure
Supervision	Prior to the commencement of site preparation works, a suitably qualified and experienced archaeologist should be appointed to undertake the mitigation measures listed below.
Supervision	All topsoil stripping/general ground reduction works onto the underlying archaeologically sterile geological subsoils associated with the development shall be monitored by an archaeologist.
Archaeological Finds	In the event of archaeological material being uncovered during the course of such monitoring, the archaeologist shall be empowered to have works stopped in the vicinity of such material pending receipt

Topic	Management Measure
	of advice from the National Monuments Service, Department of Culture, Heritage and the Gaeltacht. Likewise, should archaeological/historical artifactual material be recovered during such works, then the requirements of the National Museum of Ireland with regard to such items should be implemented.
Reporting	Following completion of the monitoring and any other possible archaeological investigations, the archaeologist shall prepare a full and final report for submission to the Planning Authority and the Department of Culture, Heritage and the Gaeltacht and National Museum of Ireland.

6.8 Landscape and Visual Management

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

Table 6-8: Landscape and Visual Management Measures

Topic	Management Measure
Landscaping Plan	The scheme includes for an appropriate and comprehensive landscape scheme comprising earth mounding, dense deciduous and evergreen planting and an upgraded roadside boundary railing and entrance detail. This Landscaping and Reinstatement Plan will be agreed with the contractor and other appropriate stakeholders. Landscape measures will be completed as part of the construction works and maintained to ensure establishment. Failed or dead plants will be replaced in the following planting season.
Screening	The building site including a site compound with site offices, site security fencing, scaffolding and temporary works will be visible during the construction phase. The provision of site hoarding along the site and construction compound boundaries will substantially address many potential effects of construction operations during the delivery stage.

6.9 Material Assets Management

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

Table 6-9: Material Assets Management Measures

Topic	Management Measure
Utilities	▪ Communication and consultation will be conducted with public utility providers ahead of construction commencement. ▪ Underground surveying techniques are a key method of understanding the below ground conditions and confirming the presence of utility services. A Cable Avoidance Tool and a Signal Generator (CAT & Genny) are used to scan the surface of the ground with an audible signal being developed where underground utilities are detected. Surface radar scanning shall also be used to locate underground services before commencement of any mechanical excavation in the vicinity of underground services. These detection surveys shall be undertaken by the Contractor. ▪ Method Statements shall be developed for the construction phase by the Contractor to ensure that all underground services are located manually and carefully protected. The CEMP prepared by the Contractor and approved by the ER shall outline a methodology and procedure for carrying out such detection surveys ▪ An avoidance policy shall be adopted where possible in relation to all services and appropriate protection shall be provided for all above and below ground services as necessary.
Drainage and Water Supply Infrastructure	▪ The mitigation measures outlined for utilities will be repeated. ▪ All runoff from paved areas will pass through an oil/fuel interceptor to ensure that contaminated waters are not discharged into adjacent watercourses.

Topic	Management Measure
	▪ A shut-off valve will be installed on the outlet of the attenuation tank. This will be used to contain any contaminated runoff in the event of a major accident on site.

6.10 Traffic Management

Prior to the construction phase a detailed traffic management plan will be submitted to FCC for approval prior to the commencement to the works. The Contractor will provide a Traffic Management Plan as part of the contract specific CEMP. This Traffic Management Plan will be developed in consultation with the ER on award of the Contract. The table below lists the mitigation measures proposed in relation to traffic management and pedestrian access.

Table 6-10: Traffic Management Measures

Topic	Management Measure
Traffic Management Plan	A detailed Traffic Management Plan will be drafted in full consultation with Fingal County Council, An Garda Siochana, the Fire Service and the Ambulance service. The Traffic Management Plan will be developed by the Project Supervisor Construction Stage into a detailed contract specific Traffic Management Plan in full consultation with the same stakeholders
Abnormal Loads	An Application for an Abnormal Load Permit will be made to Fingal Co. Council in advance for any abnormal loads exceeding the thresholds laid out in the Road Traffic (Construction and Use of Vehicles) Regulations 2003. Where possible, abnormal load movements will be restricted to evening or night time to minimise disruption to local traffic and traffic on strategic routes.
Haul routes	Dedicated construction haul routes will be identified and agreed with the local authority prior to the commencement of constructions activities onsite. The time of day permittable for such routes will also be agreed upon. Restrictions may be placed on the movement of construction related traffic if deemed necessary by Fingal County Council and/or an Garda Síochána.
Haul Vehicles	Haul vehicles must be covered after loading to ensure that there is no risk of material falling from the vehicle.
Equipment Management	Tracked excavators will be moved to and from the site on low-loaders and will not be permitted to drive on the street pavements.
Wheel Washes and Road Cleaning	Wheel washers / judder bars will be placed at all site access points to minimise the migration of detritus onto the public roads. The roads will be inspected and cleaned on a regular basis.
Staff Parking	Appropriate levels of staff parking and compounding will be provided to ensure no potential overflow or haphazard parking in the area. The Site will be able to accommodate employee and visitor parking throughout;
Site Traffic Management	▪ Once construction begins, the Site will be securely fenced off from adjacent properties, public footpaths and roads. ▪ All road works will be adequately signposted and enclosed to ensure the safety of all road users and construction personnel. ▪ A dedicated 'construction' Site access / egress junction will be provided during the Construction Phase. ▪ Provision of sufficient onsite parking and compounding to ensure no potential overflow of construction generated traffic onto the Retail Park. ▪ Site offices and compound will be located within the Site boundary. The Site will be able to accommodate employee and visitor parking throughout the construction period through the construction of temporary hardstanding areas. ▪ On completion of the works all construction materials, debris, temporary hardstands etc. from the Site compound will be removed offsite and the Site compound reinstated in full on completion of the works.

SECTION 7: OUTLINE WASTE MANAGEMENT PLAN

7.1 Introduction

This outline waste management plan relates to the management and disposal of waste generated associated with the Blackwood Square SHD. This outline waste management outlines the waste management framework and the key wastes that are likely to be generated on the project.

The Contractor is responsible for submitting the project waste management plan for the approval by the Employers Representative (ER) one month prior to construction. The plan must comply with this preliminary plan and the Department of Environment, Heritage and Local Government 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' and will include the following (but not limited to):

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

7.2 Waste Management Principles

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

7.2.1 Prevention of Waste

The management of material is key to implementing an effective waste prevention and minimization policy on site. Materials will be ordered in a timely manner and as required to avoid over ordering, excess supply and wastage. The Waste Management Plan shall provide for proper storage and handling of construction material to maximise usage and minimise waste. Materials delivered to site shall be inspected to ensure they are defect free and suitable for use.

7.2.2 Reuse of Waste

Where possible construction material will be reused on site/ off site. Material removed from site will be organised through an appropriately authorised waste collector removing to an authorised facility (licensed, permitted or registered as required).

7.2.3 Recycling of Waste

Segregation of waste streams shall be implemented on site to maximise recycling and recovery.

7.2.4 Disposal or further treatment of Waste

Segregation of waste streams shall also apply to waste streams (if found on-site) that may require specialist treatment, packaging or preparation prior to recovery or disposal e.g. Japanese knotweed, contaminated soil, asbestos, etc. The Contractor shall appoint a designated competent person for the preparation of additional paperwork and/or contact with appropriate officials and this shall be set out in the contract-specific Waste Management Plan.

7.2.5 Waste segregation, Storage and removal

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

Waste will be stored appropriately as follows:

- Clearly marked signs;
- Enclosed to prevent waste escaping;
- Segregated by type where possible;
- Suitable for that waste type, i.e. able to contain waste and prevent escape, including leaking of liquids;

7.2.6 Hazardous Wastes

Hazardous or contaminated material, including material that requires specialist treatment or disposal, will be stored separately on site to avoid cross-contamination. Hazardous wastes must not be mixed. Any hazardous waste generated (e.g. oil rags or waste oil) will be stored in appropriate receptacles or containers, bunded or other storage areas prior to their removal by an appropriately licensed contractor.

7.2.7 Waste Carriers/ Treatment Facilities

The materials to be disposed off-site classified as 'wastes' are subject to the provisions of the 'Waste Management Act', 1996 (as amended). Material removed from site will be organised through an appropriately authorised waste collector. Waste shall be brought by them to an authorised facility (licensed, permitted or registered as required). If waste is to be exported from Ireland, the Contractor will liaise with the client or its representative to arrange the necessary Transfrontier Shipment approvals through the Competent Authority.

The Contractor will ensure that:

- any waste carrier holds a valid waste collection permit;
- any disposal or recovery facility (national or international) be used for the management of waste arising from the scheme is suitably permitted, licensed or registered;
- the terms and conditions of these authorisations allow for the acceptance of the waste in question;
- the relevant authorisations remain valid when used within the lifetime of the project; and,
- all records are maintained and made available as set out below.

7.2.8 Storage, Transport and Disposal

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

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

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

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

The Contractor will ensure that:

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

7.3 By-Product - Excavated Soils

By making certain that excess uncontaminated soil and stone is beneficially used with no overall adverse impacts on the environment or human health, a material producer will ensure that the material is regarded as a by-product rather than a waste.

If the material is removed off-site for reuse as a by-product (and not as a waste), it will be done in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011. Article 27 requires that certain conditions are met and that by-product decisions are made to the EPA via their online notification form. Consequently, once a suitable project can be identified where the uncontaminated soil can be reused (infill for roads, quarry reinstatement etc) it is proposed to register the surplus soil as a by-product with the EPA.

As part of the registration with the EPA, the developer will demonstrate that the excavated soils meets the 4 by-product conditions,

a) further use of the soil and stone is certain;

b) the soil and stone can be used directly without any further processing other than normal industrial practice;

c) the soil and stone is produced as an integral part of a production process; and

d) further use is lawful in that the soil and stone fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.

If EPA accepts the soils as a by-product the soils no longer constitutes a waste.

7.4 Imported Fill and Soils

If imported fill material is required, the use of local quarries or locally available material will be prioritised.

Alternatively, fill material (soils stone) from another site that has been registered as a by-product (and not a waste) in accordance with Article 27 of the Waste Directive Regulations. will be used if it is available. This will conform to the Waste Hierarchy and divert waste from landfill.

7.5 Waste Management Framework

7.5.1 Responsibilities

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

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

7.5.2 Training

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

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

7.5.3 Records

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

A monthly summary of the include quantity, type and composition of all waste removed from site will be provided by the Contractor in the monthly Environmental Compliance Report.

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

7.5.4 Inspections

The Environmental Manager will carry out weekly inspections of the site which will include examining how the waste is segregated. The weekly inspections will be documented on the Weekly Inspection Sheet (Appendix A).

7.5.5 Audits

Waste management will be audited as part of the auditing for the overall CEMP. Upon completions of the audit attention will be given to opportunities for reducing waste. Audit findings will highlight corrective actions that may be taken in relation to management policies or site practises in order to bring about further waste reductions.

All waste records (Waste Record Sheet, waste transfer notes etc.) will be audited externally by the ER .

7.6 Identification and Segregation of Waste

Wastes generated must be identified and segregated according to their category as described by the European Waste Catalogue (EWC).

The potential waste categories include but not limited to the wastes detailed in the following section.

7.6.1 Concrete, Bricks, tiles, ceramics (17 01)

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

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

7.6.2 Wood, Glass and plastic (17 02)

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

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

Waste bituminous material may arise during the construction of internal site roads.

7.6.4 Metals (including their alloys) (17 04)

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

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

The SI sampling results indicate that the soil that will be excavated during the construction of the basement carpark will be inert. This will be sent to a suitably licenced facility for recovery/reuse. There are suitably licenced facilities with the capacity to accept the surplus soil within the Dublin Area. Note, that if the surplus soil is uncontaminated soil can be declared a by-product and subject to meeting certain conditions as set out in Article 5 of the 2008 Waste Framework Directive and Article 27 of the Waste Directive Regulations 2011 it is no longer considered a waste.

7.6.6 Insulation materials and asbestos-containing construction materials (17 06)

It's unlikely to find insulation material or asbestos-containing construction materials during this project. In the unlikely event that asbestos waste is encountered on-site appropriate storage, transportation and disposal of waste must be adhered to.

7.6.7 Packaging and Plastics (Various)

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

7.6.8 Other wastes

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

7.7 Hazardous Material Management

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

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

Under certain circumstances, specialist contractors may be required to remove the hazardous materials from site e.g. asbestos. The Contractor will seek the approval of the Employer's Representative where the services of a Specialist Contractor are to be engaged. The Contractor will ensure that the Specialist Subcontractor, if

any, will comply with all relative legislation regarding the required permits and licensing for the disposal of hazardous materials.

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

7.8 Other wastes requiring specialised management

Wastes other than those listed above may not be easily recovered. Such material should be stored separately or in a designated covered container for removal to a licensed facility for disposal.

In the event that materials such as contaminated soils are discovered, the Waste Manager shall engage with a specialist to gain appropriate authorisations, procurement approval from the Client, TFS approvals (if required) and will establish arrangements to provide for appropriate segregation, storage, collection and treatment. The Waste Manager will maintain records of all relevant correspondence and authorisations.

Rechargeable batteries should be used for portable devices where possible and any batteries or electrical equipment which may become redundant during the project should be stored separately prior to transfer to an appropriate WEEE facility.

Food waste management shall account for the need to align with health, safety and welfare at work guidelines to prevent rodent infestation.

APPENDIX A: ENVIRONMENTAL MANAGEMENT FORMS

Corrective Action Form CAR No.:

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

Verified By (Environmental Manger):	Date:

Complaint Form

Name:	Address:
Phone Number:	Email Address:
Nature of Complaint ☐ Air (dust, particulates emissions, gas, odour) ☐ Water (stream pollution, mud) ☐ Land (Waste, oil spills, landfill, hazardous waste) ☐ Noise (hauling trucks, equipment) ☐ Housekeeping (wastes, mud/ dust on public road) ☐ Others (please specify):	
Details of complaint:	
Sign:___Date: __	

Office Use Only

Complaint Number:_____Corrective Action Number: _____ Site condition at the time of complaint:
Corrective /Preventive Action Taken:

Complaint Closed by Environmental Manager:____Date:

Environmental Complaints Register

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

Environmental Incident Form

CAR No.:

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

Signature on closure (Environmental Manger):	Date of closure:

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 complet-ion date
	Yes	No	n/a			
General						
Confirm all works are confined to permitted work sites.						
Confirm works are undertaken within approved work times including haulage.						
Others (please specify)						
Air Quality and Dust Control						
Are the construction sites watered to minimize dust generated?						
Are stockpiles of dusty materials covered or watered?						
Cement debagging process undertaken in sheltered areas						
Are all vehicles carrying dusty loads covered/watered over prior to leaving the site?						
Does the public road have dirt/ dust or mud on it?						
Are dust emmissions 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 complet-ion date
	Yes	No	n/a			
Water Pollution Control						
Are water discharge licenses valid/required ?						
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 complet-ion 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 complet-ion date
	Yes	No	n/a			
Protection of Flora and Fauna						
Is there any visible damage to flora and fauna?						
Others (please specify)						
Protection of Historical Heritage						
Are earthworks being monitored by a suitably licensed and qualified archaeologist?						
Others (please specify)						

Water Quality Monitoring Field Parameter Sheet

ID	Location Description	Date	Time	Flow Rate (l/s)	Temp. (°C)	pH	Cond. (µs/cm)	Dissolved Oxygen (%)	Dissolved Oxygen (mg/L)	Turbidity (NTU)	Sample Collected (Y/N)	Observations	Sampler Initials

Visual Dust Check Monitoring Form

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

Weather Conditions Record Sheet

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

Waste Management

Waste Removal Record Form

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

APPENDIX B: CEMP CONTACT LIST

Client Contact Data

Table H1: Cosgrave Developments

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