



Construction Environmental Management Plan (CEMP)

FOR

PROPOSED STRATEGIC HOUSING
DEVELOPMENT

AT

ST MICHAELS HOSPITAL CAR PARK, DÚN
LAOGHAIRE, CO. DUBLIN

DECEMBER 2020

ON BEHALF OF

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1 INTRODUCTION

This Construction Environmental Management Plan (CEMP) has been prepared by Enviroguide Consulting on behalf of Fitzwilliam DL Ltd. for the Proposed Strategic Housing Development at St. Michaels Hospital Car Park, Dún Laoghaire, Co. Dublin (Proposed Development Site).

This CEMP describes the works and defines the environmental measures that shall be implemented for the construction works in order to manage, minimise or mitigate any potential environmental impacts that may arise as a result of the Proposed Development. A detailed description of the Proposed Development is provided in Section 2. This CEMP is produced as part of the planning application. It is intended that this will be updated to include more site-specific information once the Construction Management Team (CMT) is appointed.

The CEMP is an integral part of the Site Health, Safety, Environmental and Quality Management System (HSEQMS) and also part of the Construction Health and Safety Plan documentation. The CEMP is also subject to the requirements of the Site Quality Management System (QMS) with respect to documentation control, records control and other relevant measures.

The primary distribution list for this document will include the following personnel;

- Construction Director;
- Construction Manager;
- Construction Management Team (CMT);
- Environmental Officer;
- Environmental Consultant;
- Site Supervisors; and
- Other Relevant Personnel

1.1 Objective and Purpose

The purpose of a CEMP is to provide effective, site-specific procedures and mitigation measures to monitor and control environmental impacts throughout the Construction Phase of the project and ensure that construction activities so far as is practical do not adversely impact the environment including amenity and traffic in the surrounding area. The objective of this document is to set out and communicate the procedures, standards, management responsibilities and key environmental obligations that apply to all contractor organisations, their sub-contractors and employees in order to address and prevent potential environmental effects that may arise from the construction of the Proposed Development.

1.2 Scope of CEMP

This CEMP defines the approach to environmental management during implementation and roll-out of the Construction Phase of the project.

Compliance with the CEMP, including the procedures, work practices and controls is mandatory and must be adhered to by all personnel and contractors employed on the

Construction Phase of the Proposed Development. This CEMP seeks to promote best environmental practices on-site for the duration of the Construction Phase.

This CEMP will:

- Provide an outline plan for achieving and implementing any environmental and ecological mitigation measures identified
- Comply with all relevant conditions attached to the Grant of Planning Permission once issued; and
- Promote best environmental on-site practices for the duration of the Construction Phase.

1.3 'Live document'

This CEMP is considered a 'live' document and as such will be reviewed on a regular basis. Updates to this CEMP may be necessary due to any changes in environmental management practices and/or contractors. In addition to further mitigation measures that may be identified as part of detailed design and review in terms of Environmental Impacts.

As detailed in later sections, the procedures agreed in this CEMP will be audited throughout the project roll-out phase to ensure compliance. All documentation required by this CEMP such as plans, programmes, operating procedures should, once received by the appointed contractors, be appended to this document and reviewed and updated as part of the overall CEMP for the Proposed Development.

2 PROPOSED DEVELOPMENT DESCRIPTION

2.1 Proposed Development

The Proposed Development will occur at within the north-eastern portion and car park of St Michaels Hospital. The Proposed Development Site has an area of approximately 0.42 hectares (Ha) with the majority of the Proposed Development Site currently operating as a car park. The Proposed Development Site location is presented in Figure 2-1.

The Applicant is seeking planning permission from Dún Laoghaire – Rathdown County Council (DLRCC) for the future phased development of the lands at St. Michael's Hospital car park, Dún Laoghaire, Co. Dublin.

The Proposed Development will consist of the demolition of an existing 2 no. storey house on the Proposed Development Site and the construction of 102 no. build-to-rent residential apartments (80 no. 1-bed and 22 no. 2-bed units) across 2 no. buildings (Building 01 and Building 02), along with ancillary residential amenities and a publicly accessible café on a c. 0.42ha site. Building 01 to the north extends to part 5, part 6, part 8 and part 13 no. storeys in height. Building 02 to the south extends to 9 no. storeys in height, with setback 9th storey.

Residential amenity space in the form of a reception, coworking/study space, gym, games area, lounge/kitchen area, and multi-purpose recreational space is provided at ground floor level of Building 01, alongside a reception and postal storage area. External roof terraces are included at storeys 6 and 9 at Building 01, with an enclosed glazed amenity space at 13th storey level, with external terrace. An external roof terrace is provided at 9th storey level at Building 02.

The Proposed Development includes a vehicle right of way providing access to St. Michael's Hospital along the western perimeter of the Proposed Development Site, accessed from Crofton Road. This provides access to 3 no. car parking spaces (including 1 no. disabled space) located between the two buildings. A secondary right of way is provided via a landscaped pedestrian route along the eastern perimeter of the Proposed Development Site providing access to St. Michael's Hospital. A total of 150 no. bicycle parking spaces are provided at the ground floor level of Building 02 (alongside a bicycle repair room), 26 no. within the central courtyard and 8 no. adjacent to the café at the northern perimeter.

The Proposed Development also includes an ESB substation, bin store, services and drainage infrastructure, boundary treatments, access provision at Crofton and all ancillary development works necessary to facilitate the development.

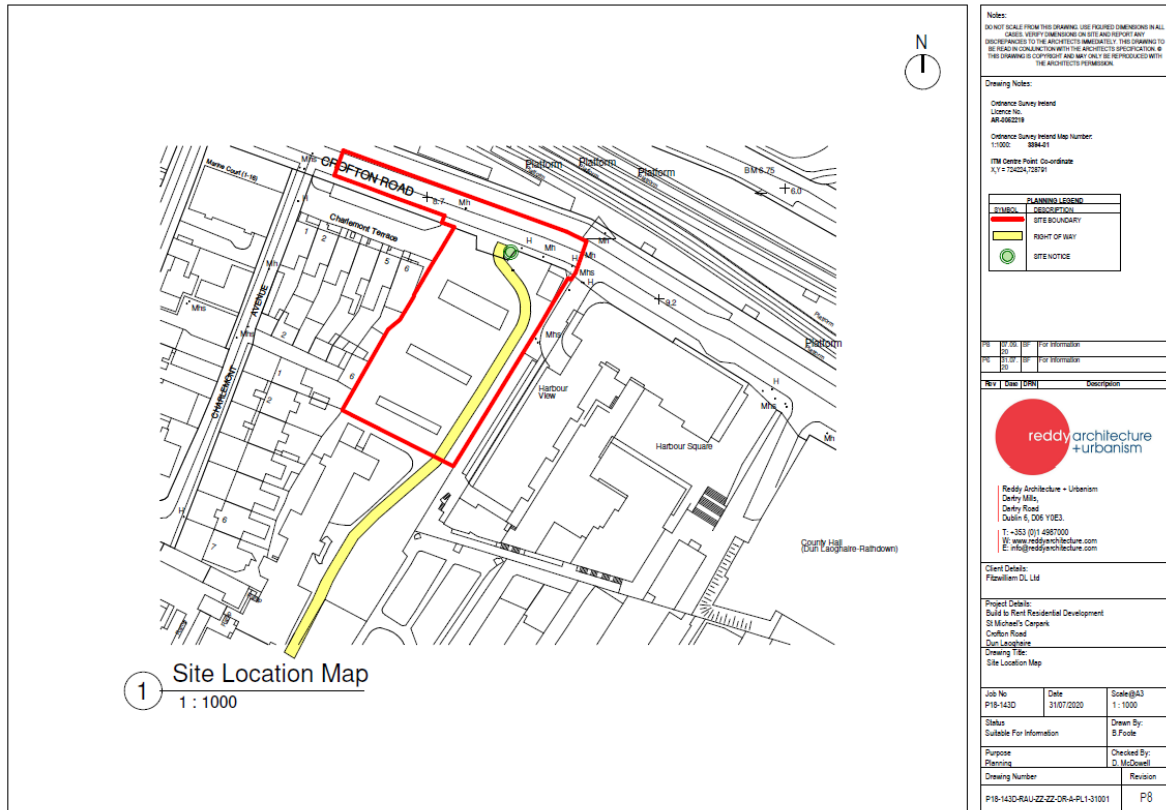


Figure 2-1: Proposed Development Site Location

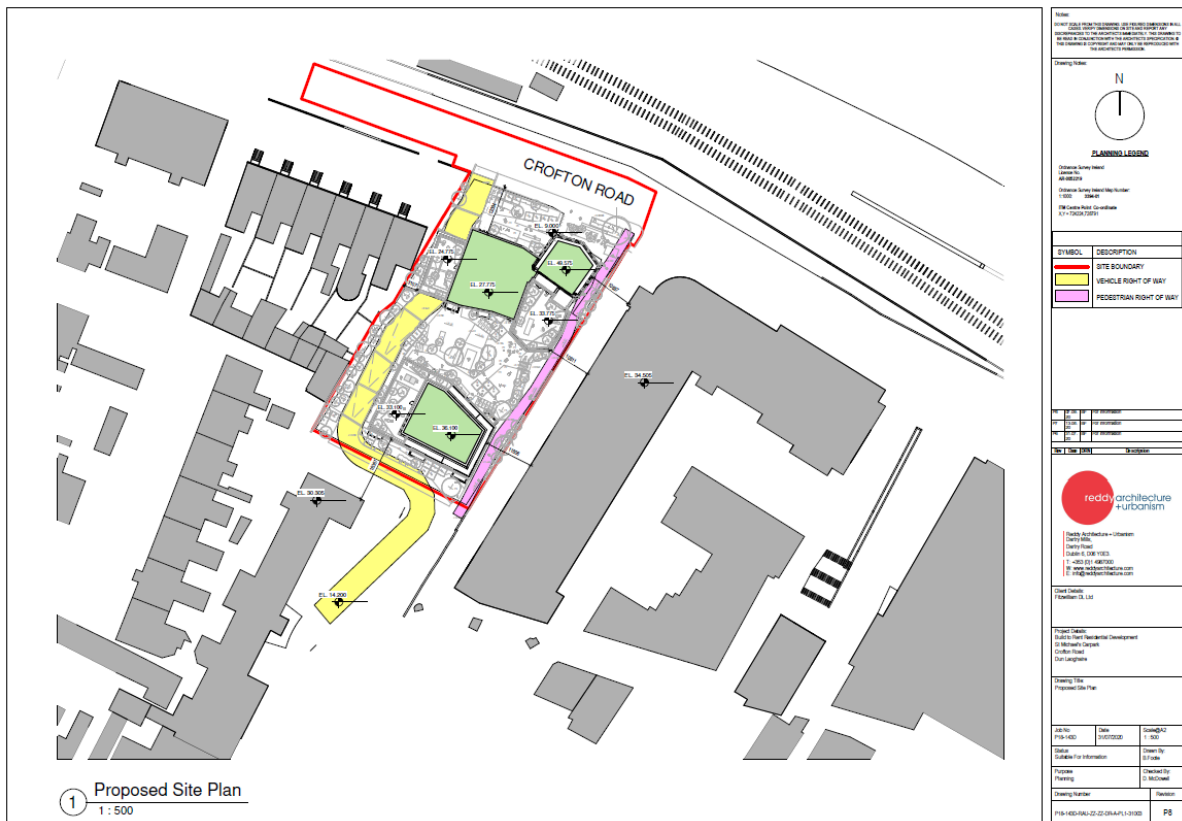


Figure 2-2: Proposed Development Site Layout

3 CONSTRUCTION SCHEDULE

3.1 Working Hours

The working hours for the construction industry will be adhered to during the course of the construction process and will be 07.00am to 19.00pm Monday to Friday and 08:00am to 14:00pm on Saturdays.

No works are envisaged to be carried out on Sundays or Bank Holidays. Should there be a need to work Sundays/Bank Holidays, a written submission will be made to DLRCC for permission to do so.

3.2 Site Construction Compound

All construction support related activities will be contained within the Proposed Development Site compound. These include staff welfare facilities such as toilets, canteen and site offices. Materials handling and storage including waste storage will be contained within the boundary of the Proposed Development Site.

Warning signs will illustrate the required PPE and risks associated when entering the construction site.

4 PROJECT ROLES AND RESPONSIBILITIES

4.1.1 Construction Director

The Construction Director will have an overall responsibility for the organisation and execution of all related environmental activities as appropriate, in accordance with regulatory and project environmental requirements. The principal duties and responsibilities of the Construction Director will include:

- Overall responsibility for the development and implementation of the CEMP;
- Ensuring adequate resources are available to ensure the implementation of the CEMP;
- Responsibility for the management review of the CEMP for suitability, adequateness and effectiveness; and
- Setting out the focus of environmental policy, objectives and targets for the Contractor.

4.1.2 Construction Manager

The Construction Manager is directly responsible to the Construction Director for the successful execution of the project. The principal duties and responsibilities of this position will include:

- Reporting to the Construction Director on the on-going performance of the CEMP;
- Discharging his/her responsibilities as outlined in the CEMP;
- Supporting the CMT and the Environmental Officer through the provision of adequate resources and facilities to ensure the implementation of the CEMP;
- Give Contractors precise instructions as to their responsibility to ensure correct working methods where risk of environmental damage exists;
- Where appropriate, ensure Contractors method statements include correct waste disposal methods; and
- Co-ordinate environmental planning of CMT activities to comply with environmental authority's requirements and with minimum risk to the environment.

4.1.3 Environmental Officer

The Environmental Officer will be responsible to the Construction Manager for, but not limited to, the following activities:

- Ensuring that the requirements of the CEMP are developed and environmental system elements (including procedures, method statements and work instructions) are implemented and adhered to with respect to environmental requirements;
- Reviewing the Environmental responsibilities of all Sub- Contractors in scoping their work and during their Contract tenure;
- Ensuring that advice, guidance and instruction on all CEMP matters is provided to all managers, employees, construction contractors and visitors on site;
- Reporting to the Construction Manager on the environmental performance of Line Management, Supervisory Staff, Employees and Contractors;
- Advising site management on environmental matters;

- Maintain awareness of any potential environmental risks relating to the Contractors and bring these to the notice of the appropriate management;
- Ensure materials/waste register is completed; and
- Maintenance of all environmental related documentation.

4.1.4 Project Environmental Consultant

A contracted Environmental Consultant will be engaged for the duration of the construction work by the Contractor. The appointed Environmental Consultant will be competent, qualified and experienced in the field of environmental management; with expertise in the areas of contaminated land, water and waste management and will be responsible for producing all environmental reporting procedures.

The Project Environmental Consultant will be responsible to the Environmental Officer for, but not limited to, the following activities:

- Preparation of the CEMP, environmental control plans, supporting procedures;
- Advising the site management on environmental matters as appropriate;
- Carrying out environmental surveys (data logging (noise, water, dust, etc.)) where required;
- Generating reports as required to show environmental data trends and incidents;
- Carrying out audits against the specific measures listed in the Planning Conditions and in the Appropriate Assessment (AA) and Environmental Impact Assessment Screening Report (EIAS) Mitigation Measures or appointing an Ecological Clerk of Works to carry out specialist ecology work;
- Advising on the production of written method statements and site environmental rules and on the arrangements to bring these to the attention of the workforce as required; and
- Investigating incidents of significant, potential or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence.

4.1.5 Project Communications Officer

The Project Communications Officer is responsible for conducting all public liaison associated with the construction phase of the project. The responsibilities and duties of the Project Communications Officer include the following:

- Responding to any concerns or complaints raised by the public in relation to the construction phase of the project;
- To liaise with the Environmental Officer on community concerns relating to the environment;
- Ensure the Environmental Officer is informed of any complaints relating to the environment; and
- Keep the public informed of project progress and any construction activities that may cause inconvenience to the local community.

The Communications Officer will report to the Construction Manager.

4.1.6 Site Supervisors

All Site Supervisors are required to:

- Read, understand, and implement the CEMP;
- Have knowledge of the requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance. Where necessary seek the advice of the contracted Environmental Officer;
- Ensure that environmental matters are taken into account at all times;
- Be aware of any potential environmental risks relating to the Proposed Development Site, plant or materials to be used on the premises and bring these to the notice of the appropriate management; and
- Ensure that any plant is environmentally suited to the task in hand.

4.1.7 Site Personnel

All Contractors, and other site personnel, on the project will adhere to the following principal duties and responsibilities:

- To co-operate fully with the Construction Management Team (CMT) and the Environmental Officer in the implementation and development of the CEMP at the Proposed Development Site;
- To conduct all their activities in a manner consistent with regulatory and best environmental practice;
- To participate fully in the environmental training programme and provide management with any necessary feedback to ensure effective environmental management at the Proposed Development Site; and
- Adhere fully to the requirements of the site environmental rules.

5 PROJECT ENVIRONMENTAL POLICY

Fitzwilliam DL Ltd. recognises and seeks to minimise the impacts of its business on the environment. The appointed contractor will be obliged to:

- Carry out the Project in full compliance with all applicable environmental regulations and to other requirements to which we subscribe;
- Implement good environmental practice as part of designs, e.g. carry out design reviews, risk assessments, etc. on all relevant projects;
- Prevent pollution from activities through a system of operational controls that include written instructions and staff training appropriate to the environmental requirements of their work;
- Continually improve Project environmental performance by setting objectives and targets and implementing them through an environmental programme;
- Informing all project employees about Environmental Policy and explaining what they are required to do to protect the environment; and
- Implement this Policy through the successful operation of the CEMP.

This policy will be reviewed periodically, considering current and potential future business, legal and environmental issues.

5.1 Site Environmental Awareness

The following general Site Environmental Rules will apply. These general rules will be communicated to all site personnel via the site induction training and they will be posted across the Site at strategic locations, such as the Proposed Development Site entrance, canteen and near the entrances to buildings.

5.1.1 General Site Environmental Rules

- Report any signs of pollution or environmental damage to the manager no matter how small;
- Report any spills, incidents or near misses that occur on site immediately to the site foreman;
- Refuel only in designated, impermeable areas equipped with spill kits;
- Do not dispose of anything into a drain or onto land. All waste must be sent to the designated site waste management areas;
- Do not throw litter, all waste must be sent to site waste management compound;
- Do not drive plant or machinery outside the authorised working boundaries of the site; and
- IF IN DOUBT, ASK THE CONTRACTED SITE SUPERVISOR AND/OR ENVIRONMENTAL OFFICER FOR FURTHER INFORMATION.

The CMT will develop Environmental Procedures to control the potential impacts from the construction phase of the development. These procedures together with the site Environmental Policy are to be made available in the main offices and in the main Environmental Health and Safety (EHS) information points at the Proposed Development Site.

The training of the site construction staff is the responsibility of the Construction Management Team. An environmental training programme will be organised for onsite personal to outline the CEMP and to detail the site environmental policy.

A brief outline of this CEMP will be incorporated into the site induction course.

Contractors shall verify the competency of their drivers and sub-contractor drivers. Where practical, employers are encouraged to identify a pool of drivers who would regularly be used to service the project.

There will be regular audits and monitoring of the CEMP through an Environmental Auditing and Inspection programme, which is to be developed in conjunction with the Contractor.

5.1.2 Communication & Consultation

The Project Communications Officer will undertake any required 3rd party communication and liaise directly with landowners/local authorities/members of the public, etc. for access, scheduling of works, accommodation works etc.

5.2 Site Security, Public Health and Safety and Site Access and Egress

The Proposed Development lands have existing boundaries that prevent access and egress to the Site . A site compound and parking facility will be set up before any construction work commences onsite. All construction support related activities will be contained within the site compound. These will include office facilities, welfare facilities such as toilets and canteen. Materials handling and storage including waste will be contained within the boundary of the Proposed Development. The Proposed Development Site entrances will be appropriately secured and hoarding/fencing will be erected around the Proposed Development boundary to prevent unauthorised access to the construction site. Fencing will be maintained and will contain photomontage images of the completed Project.

Warning signs will illustrate the required PPE and risks associated when entering the construction site.

Security of the Proposed Development is an important issue with respect to restricting site entry to personnel solely involved in the construction process during working hours and preventing unauthorised access out of hours. It is expected that site visitors will be limited to contracted site personnel. Site access for all personnel and visitors will be strictly controlled and all visitors will report to the site offices prior to entering the construction area. During working hours site access and egress will be controlled by a person and outside of the working hours a camera and remote monitoring system will be used to monitor the Proposed Development to ensure safe access and egress.

All personnel working on site will be required to have a valid Safe Pass card and be inducted by the main Contractor in relation to site specific safety information.

Regular inspections of the gates/fencing/hoarding will be undertaken to ensure that the safety of any vehicles or pedestrians is not compromised.

5.3 Managing Environmental Incidents and Complaints

It is essential that complaints and requests for information from members of the public are handled appropriately, efficiently and in line with a robust complaint handling procedure. The Construction Manager or Environmental Officer will develop an appropriate complaints procedure, and corrective action procedures. All follow up actions on the construction site will be managed by the Contractor.

A log shall be maintained on site of all complaints detailing the following as a minimum:

- Name and address of complainant;
- Time and date the complaint was made;
- Date, time and duration of incident;
- Nature of the complaint (e.g. noise nuisance, dust nuisance etc.);
- Characteristics, such as rumble, clatters, intermittent, etc;
- Likely cause or source of incident;
- Weather conditions, such as wind speed and direction;
- Investigative and follow -up actions; and
- Root cause analysis and preventive actions.

All personnel working on the Proposed Development will be inducted into the complaints handling procedure and will be aware that complaints are to be directed immediately to the Site Manager or their designated deputy.

All complaints will be investigated to confirm their validity. Appropriate corrective actions will be put in place to ensure that the complaint is appropriately dealt with. Preventative action measures will be put in place where necessary to prevent such a complaint in the future. Where preventative action measures are taken, staff will be informed during a toolbox talk where the actions are relevant to their role or overall operations.

6 ENVIRONMENTAL IMPACTS AND CONTROLS

The environmental control measures that will be implemented during the construction phases are detailed in the following sections.

6.1 Potential Impacts of the Development

The CEMP is designed to implement mitigation measures to control impacts relating to:

- Air;
- Water;
- Soil and Geology;
- Noise and vibration ;
- Biodiversity; and
- Archaeology

This CEMP is to be read in conjunction with the relevant design drawings and reports relating to the Proposed Development

The CEMP outlines the measures that will be implemented to prevent and mitigate any potential environmental issues that may arise during the construction phase.

6.2 Conditions of Planning Permission

Compliance with environmental conditions and the control / mitigation measures set out in the grant of planning permission will be included in the CEMP once these planning conditions are known.

6.3 EIAS Mitigation Measures

An EIAS (Environmental Impact Assessment Screening Report) report has been prepared for the Proposed Development that identifies a series of characteristics of the Proposed Development and their significance on environmental receptors.

The environmental and ecological controls that will be implemented during the construction phases above are detailed in the following sections.

It will be the responsibility of the Contractor to ensure full implementation of all environmental and ecological controls which are identified in the following sections.

6.4 Implementation of Controls

The Construction Management Team, the respective Construction Manager and all contractors shall be responsible for the implementation of controls as identified in Section 6.5.

Contractors will comply with the requirements of the CEMP to document and seek approval for Method Statements, Permits and other site-generated documentation as requested.

This CEMP will form part of tender and contract documentation for each works contract.

Any Contractor submitting a tender for the project must declare any legal proceedings with a regulatory authority, including the Environmental Protection Agency (EPA) or environmental agencies or competent authorities from other jurisdictions.

Contractors shall ensure that any sub-Contractors working under their remit are supplied with a copy of the CEMP, receive sufficient environmental training and are aware of their environmental obligations on the project.

Environmental requirements will be controlled as follows:

- Procedures and control measures as set out in this CEMP;
- Approved Method Statements and Risk Assessments from Contractors which shall address all potential environmental impacts for the specific task;
- Detailed contractor plans for specific environmental aspects;
- Emergency response plans; and
- Specific induction training before commencing work.

In summary, it is expected that all Contractors will follow good environmental practice throughout all activities.

6.4.1 Communication & Training - Construction Personnel

In addition to Contractor provided site induction, CMT are obliged to conduct safety meetings / toolbox talks on relevant EHS topics for all employees in their care on a weekly basis. Details of all safety meetings / toolbox talks, including topics and attendees must be submitted to the CMT.

6.4.2 Keeping of Records

Records will be maintained in the onsite Environmental Management File pertaining to all aspects of the construction environmental management procedures outlined in this document.

Records of induction training for drivers, workers, and visitors will be maintained on site.

Site access for all personnel and visitors will be strictly controlled and all visitors will report to the site offices prior to entering and leaving the construction area. Records of site personnel entering and leaving the Proposed Development will be maintained on-site.

All waste storage areas will be clearly identified (e.g. signage) and recorded on a site map and maintained on-site.

In the event of spillages or other incident, the Contractor or delegate will provide full details about the incident and remedial actions undertaken to the relevant authorities and record the incident in the site environmental register. The relevant authorities including DLRCC will be notified as appropriate.

The Contractor will ensure that fully detailed records are maintained of any 'incident / event' likely to cause non-compliance and / or harm to the environment. Environmental Incidents/Near Miss Reports will be reported and recorded.

The Contractor or designate will be responsible for conducting environmental inspections at the Proposed Development during the construction phase of the development to ensure

compliance with controls as detailed within this report, specifically to address soil, surface water runoff and dust management.

Each Contractor will be responsible for ensuring that a full record and copy of all Material Safety Data Sheets (MSDS) pertaining to their works is kept on file and up to date in their site offices

Complaints and Follow up Actions on the construction site will be managed by the Contractor and will ensure that all complaints are recorded.

Each Contractor will be responsible for ensuring that a full record and copy of all Material Safety Data Sheets (MSDS) pertaining to their works is kept on file and up to date in their site offices.

Contractors will also retain a duplicate copy of all MSDSs held by the Contractors.

The Environmental Officer will be responsible for monitoring the movement and treatment of all waste during the construction phase of the project. Monitoring will be carried out by the Environmental Officer who will record the nature, quantities and off-site destination of wastes.

6.4.3 Monitoring, Audits and Inspections

The inspection and monitoring stage of the construction activities increase the effectiveness of environmental mitigation, as this addresses any environmental problems that may be occurring and assists in intervention and response at an early stage.

Inspections by the Construction Management Team will address environmental issues including dust, litter, noise, traffic, surface water, waste management and general housekeeping. These will be carried out on both scheduled and random intervals. The findings of these inspections will be recorded in the environmental register.

An Environmental Inspection Audit of the construction site will be carried out by an appointed Contractor. Findings of this audit will be documented. The frequency of these audits (weekly / monthly / other) will be based on the nature, risk and intensity of construction activity.

Environmental Monitoring requirements specific to impact controls are included throughout the specific Operation Control sections in this CEMP.

6.4.4 Non-Conformance and Corrective and Preventative Action

Corrective Action Requests (CARs) will be issued to ensure that prompt action is agreed and committed to, with a view to the effective resolution of any deviations from the CEMP requirements or any environmental issues.

CARs may be raised as a result of:

- An internal or external communication;
- An internal audit;
- A regulatory audit or inspection;
- A suggestion for improvement; and
- An incident or potential incident.

All corrective action requests will be numbered and logged.

6.5 Operation Controls

6.5.1 Control of Noise

Consideration will be given in relation to establishing significant construction noise effects as set out in BS5228. During the construction phase, the 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 various site noise control measures will include but not be limited to:

- Establish channels of communication between the Contactor, local authority and potentially impacted residents where appropriate;
- Limiting the hours during which site activities likely to create high levels of noise are permitted;
- Erection of site hoarding if required;
- Consolidation of delivery loads to and from the site and managing large deliveries on site to occur outside of peak periods;
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations;
- Selection of plant with low inherent potential for generating noise;
- Siting of plant as far away from sensitive receptors as permitted by site constraints
- Identification of dedicated delivery areas;
- Avoid unnecessary revving of engines and switch off vehicles when not required;
- Keep vehicles adequately maintained and serviced;
- Staff vehicle movements to be minimised by promoting, where feasible the use of public transport and car sharing;
- Appointing a site representative responsible for matters relating to noise;
- Noise monitoring during construction activities and in times of increased noise generating activities (e.g. rock breaking or demolition); and
- Strict adherence to site working hours as outlined in this CEMP.

Specific control measures relating to construction activities undertaken by the Contractor will be set out within the Construction Management Plan (CMP), prepared in advance of the works.

All construction works will be required to operate within the guidelines of the NRA Construction Noise Limits (2004) outlined in Table 6-1 as follows:

Days and Times	Noise Levels (dB re. 2x10 ⁻⁵ Pa)	
	L _{Aeq} (1hr)	L _{Amax}
Monday to Friday 07:00 to 19:00hrs	70	80
Monday to Friday 19:00 to 22:00hrs	60	65*
Saturdays 08:00 to 16:30hrs	65	75

Sundays & Bank Holidays 08:00 to 16:30hrs	60	65*
*Construction activity at these marked times, other than that required in respect of emergency works, will normally require the explicit permission of the relevant local authority Source: National Roads Authority Guidelines for the Treatment of Noise and Vibration in National Road Schemes, 2004		

Table 6-1: Maximum Permissible Noise Levels at the Facade of Dwellings during Construction

The Contractor will be required to take specific noise abatement measures where deemed necessary, and to comply with the recommendations of BS 5228-1:2009+A1:2014.

6.5.1.1 Noise Sensitive Locations

As noise sensitive receptors have been identified in the immediate vicinity of the Proposed Development including St Michael's Hospital as well as residential developments located to the north and east of the Proposed Development Site, it is foreseen that there may be potential negative impacts to human health due to noise.

6.5.1.2 Assessment of Noise Effects

Consideration will be given to establishing significant construction noise effects as set out in BS5228. During the construction phases, the 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'.

6.5.1.3 Best Practice Guidelines for the Control of Construction Noise

Best practice control measures from construction sites within BS 5228-1:2009+A1:2014 "Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2" will be used to control noise impacts associated with construction activities on the site. BS 5228 includes guidance on the various aspects of construction site noise mitigation, including, but not limited to the measures set out in sections 6.5.1.4 -6.5.1.10 below. Consideration will also be given to best practice measures as outlined in BS: 6187:2011: "Code of practice for full and partial demolition.", during demolition works.

6.5.1.4 Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the Proposed Development Site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the Proposed Development Site be found to generate high noise levels, the first action should be to identify if that item can be replaced with a quieter alternative.

6.5.1.5 Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control at source. This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or

application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

Referring to the key noise generating sources during the construction phases, at minimum the following best practice migration measures shall be observed:

- For mobile plant items such as cranes, dump trucks, excavators and loaders, the installation of an acoustic exhaust and/or maintaining enclosure panels closed during operation can reduce noise levels by up to 10dB;
- Mobile plant will be switched off when not in use and not left idling;
- For steady continuous noise, such as that generated by diesel engines, it is possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover;
- For percussive tools such as pneumatic concrete breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed. Erection of localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries are other suitable forms of noise reduction;
- For all materials handling, the contractor will ensure that best practice site noise control measures are implemented including ensuring that materials are not dropped from excessive heights and drop chutes/dump trucks are lined with resilient materials, where relevant;
- Where compressors, generators and pumps are located in areas in close proximity to noise sensitive properties/ areas and have potential to exceed noise criterion, these will be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation;
- Resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can be controlled by fixing resilient materials in between the surfaces in contact;
- Demountable enclosures can also be used to screen operatives using hand tools and may be moved around site as necessary; and
- All items of plant will 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.

6.5.1.6 Liaison with the Public

The Contractor will act as the designated noise liaison officer. Any noise complaints should be logged, reported to the designated Contractor, and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. demolition, breaking, etc., the designated Contractor will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

6.5.1.7 Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling or breaking works are in progress on a site at the same time as other works of construction or

demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities.

6.5.1.8 The Introduction of New Noise Sources onto the Proposed Development Lands

The potential of any item of plant to generate noise will be assessed prior to the item being brought onto the Proposed Development Site with regard to the following:

- Consideration of Alternatives;
- Information to be submitted by the Contractor; and
- In-situ Noise Measurement.

6.5.1.9 Noise Control Audits

Noise and vibration audits will be established on site throughout the project. Noise monitoring shall be carried out prior to works commencing at the Proposed Development Site to establish the baseline data and all subsequent results shall be recorded and issued to the planning authority DLRCC regularly. The noise monitoring measures will include monitoring stations located at recommended locations on site, which will be monitored daily to record background and construction noise activity. This will be subject to review and the frequency of audits may be revised if deemed appropriate.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed;
- Opportunities for noise control 'at source';
- Optimum siting of plant items;
- Plant items being left to run unnecessarily;
- Correct use of proprietary noise control measures;
- Materials handling;
- Poor maintenance; and
- Correct use of screening provided and opportunities for provision of additional screening.

6.5.2 Control of Vibration

All construction works will be required to operate within the Construction Vibration Limits Outlined in Table 6-2 as follows:

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:-			
Structurally Sound Buildings	Less than 15Hz	15 to 40Hz	40Hz and above
	15mm/s	20mm/s	50mm/s
Protected Buildings	6mm/s	10mm/s	25mm/s

Source: BS 5228-2 2009 + A1 2014

Table 6-2: Recommended Construction Vibration Threshold for Control of Building Damage

Ground vibration may also potentially occur during the construction phase. Vibration can be measured in terms of Peak Particle Velocity (PPV), this is expressed in millimetres per second (mm/s). Vibration standards can be considered in two varieties: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. For example, vibration is perceptible at around 0.5mm/s in the case of road traffic, however at higher magnitudes, this vibration may become an annoyance.

Rock breaking and piling are considered the primary sources of vibration during the construction phase of a project. These would occur at higher levels of vibrations (up to 12mm/s and 6mm/s respectively), and this can be tolerated for events of a short duration.

Guidance relevant to the protection of building structures is contained in the following documents:

- British Standard BS 6187:2011: Code of practice for full and partial demolition;
- British Standard BS 7385: 1993: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration, and;
- British Standard BS 5228: 2009+A1 2014: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

6.5.2.1 Vibration Mitigation Measures

The Noise and Vibration Management Plan will detail the measures to be taken to mitigate the impacts of vibration during construction. The following measures will be taken to ensure that no significant vibration levels occur, and that all appropriate steps are taken to assist in effective vibration level management:

- Vehicle engines shall be switched off when not in use;
- Machines will be fitted with suitable silencers;
- If appropriate, acoustic screens will be deployed;
- In method statement/risk assessment the contractor will highlight any activity that may cause significant vibration levels, and include measures in helping to mitigate these emission levels;
- Equipment is to be task-specific; and
- Best practice noise and vibration control measures will be employed by the contractor and screening provided to adjoining properties.

6.5.3 Control of Air Quality and Dust

In order to sufficiently ameliorate the likely air quality impact, a schedule of air control measures has been formulated for the construction phase associated with the Proposed Development set out in the following sections.

6.5.3.1 Dust Control Measures

The objective of dust control at the Site of the Proposed Development is to ensure that no significant nuisance occurs at nearby sensitive receptors. In order to develop a workable and

transparent dust control strategy, the following management plan has been formulated by drawing on best practice guidance from Ireland and the UK.

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be achieved through good design and effective control strategies.

At the construction stage, the siting of construction activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions in order to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions (e.g. wind) by either restricting operations on-site or using effective control measures quickly before the potential for nuisance occurs:

- During working hours, the Contractor or delegate will monitor dust control methods as appropriate;
- Complaint registers will be maintained on site detailing all telephone calls and letters of complaints received in connection with construction activities, together with details of any remedial actions carried out;
- It will be the responsibility of the Contractor at all times to demonstrate full compliance with the dust control conditions. Regular toolbox talks / briefings will be given to construction staff, sub-contractors and operatives to raise awareness of the need to minimise dust. The implementation of dust suppression will be monitored, reviewed and any actions required addressed on an ongoing basis; and
- At all times, the procedures put in place will be strictly monitored and assessed.

The dust minimisation measures shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practise and procedures. In the event of dust nuisance occurring outside the Proposed Development Site boundary, site activities will be reviewed and satisfactory procedures implemented to rectify the problem. Specific dust control measures to be employed are highlighted below.

6.5.3.2 Dust Control -Preparing and Maintaining the Site

At a minimum, the following will be adhered to as to minimize dust generation:

- Plan construction site layout so that machinery and dust causing activities are located away from receptors, as far as is possible;
- All work vehicles to be inspected by the person in charge of gate control prior to egress from the Proposed Development Site;
- Erect solid screens or barriers around dusty activities or the Proposed Development Site boundary that are at least as high as any stockpiles onsite;
- Fully enclose specific operations where there is a high potential for dust production and the Proposed Development Site is active for an extensive period;
- Avoid construction site runoff of water or mud;
- Keep fencing, barriers and scaffolding clean using wet methods;
- Remove materials that have a potential to produce dust from Proposed Development Site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below;
- Cover, seed, moisten or fence stockpiles to prevent wind whipping; and

- During non-working hours, the Proposed Development Site will be left in a condition as to prevent dust generation.

6.5.3.3 Dust Control - Onsite and Offsite Roads

The following control measures are to be put in place to minimise and suppress dust emissions from haul routes:

- A speed restriction of 20 km/hr will be applied as an effective control measure for dust for on-site vehicles;
- Bowers or appropriate water-based dust suppression systems will be available and will be monitored and maintained particularly during periods of dry weather throughout the construction period, to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface routes to and from the Proposed Development Site will be swept to remove mud and aggregate materials from their surface.

Spillage and blow-off of debris, aggregates and fine material onto public roads will not be acceptable and will be reduced to a minimum by employing the following measures:

- Vehicles transporting material with potential for dust emissions to an off-site location shall be enclosed or covered with a tarpaulin if required to restrict the escape of dust; and
- Public roads outside the Proposed Development Site shall be regularly inspected for cleanliness on a daily basis, as a minimum, and cleaned as necessary.

If necessary, a road sweeper will be deployed to ensure that public roads are kept free of debris.

6.5.3.4 Dust Control – Stockpiles

Stockpiling of excavated soils and imported materials (e.g. quarry stone, sand) will be avoided where possible. However, should stockpiling of materials be required onsite during the development, the location and moisture content of stockpiles are important factors which determine their potential for dust emissions. The following dust control measures will be employed as best practice where stockpiling of materials is required:

- Overburden material will be protected from exposure to wind by storing the material in sheltered regions of the Proposed Development Site; and
- Where materials are required to be stockpiled for longer periods of time during the development, regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust. The regular watering of stockpiles has been found to have an 80% control efficiency.

6.5.3.5 Dust Control -Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;

- Ensure an adequate water supply on the Proposed Development Site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- Use enclosed chutes and conveyors and covered skips;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- Ensure equipment is readily available onsite to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

6.5.3.6 Dust Control -Waste Management

- Bonfires and burning of waste materials are prohibited.

6.5.3.7 Dust Control -Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) if possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery; and
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

6.5.3.8 Dust Control -Site Management

- Regular inspections of the Proposed Development Site and boundary should be carried out to monitor dust, records and notes on these inspections should be logged;
- Records will be kept of all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the logbook; and
- Regular liaison meetings will be held with other high-risk construction sites within 500m of the Proposed Development Site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the offsite transport/deliveries which might be using the same strategic road network routes.

6.5.3.9 Dust Monitoring

Daily onsite and offsite inspections will be carried out, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This will include regular dust soiling checks of surfaces such as street

furniture, cars and windowsills within 100 m of Proposed Development Site boundary, with cleaning to be provided if necessary.

Regular site inspections will be carried out to monitor compliance with the CMP, record inspection results, and make an inspection log available to the local authority when asked. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

Dust deposition, dust flux, or real-time PM10 continuous monitoring locations will be agreed with the Local Authority.

Where possible, commence baseline monitoring at least three months before work commences on site or before work on a phase commences.

Dust monitoring will be conducted using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m²*day) during the monitoring period between 28-32 days.

6.5.4 Control of Emissions to Drainage and Surface Water

6.5.4.1 Fuel and Chemical Storage

Appropriate storage facilities will be provided on site. Areas of high risk include:

- Fuel and chemical storage;
- Refuelling Areas;
- Site Compound; and
- Waste storage areas.

Any fuel, oils and chemicals will be stored in a contained storage area remote from any surface water drains or locations. Off-site disposal of waste oils, paints and chemicals will be carried out in accordance with the related waste requirements.

All tank, container and drum storage areas shall be rendered impervious to the materials stored therein. Bunds shall be designed having regard to Environmental Protection Agency guidelines 'Storage and Transfer of Materials for Scheduled Activities' (2904). All tank and drum storage areas shall, as a minimum, be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

Concrete mixer trucks will not be permitted to wash out on site with the exception of cleaning the chute into a container which will be removed off site to an authorised wastewater treatment facility.

Water will not be directly discharged to any open water courses (e.g. Monkstown Stream and Liffey and Dublin Bay).

6.5.4.2 Control of Emissions to Surface Water

As part of the overall construction methodology, sediment and water pollution control risks arising from construction-related surface water discharges will be considered. All works carried out as part of these infrastructure works will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990 and the contractor will cooperate fully with the Environment Section of DLRCC in this regard.

Personnel working on the Proposed Development Site will be trained in the implementation of environmental control and emergency procedures. This CEMP and the relevant documents produced will be formulated in consideration of standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- CIRIA 697, The SUDS Manual, 2007;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

The following controls will be implemented to ensure that no potential adverse effects will arise from construction-related surface water discharges from the Proposed Development. The construction contractor will be required to implement the following controls to ensure that there will not be any release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters:

- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the Proposed Development Site;
- Pumping of concrete will be supervised to ensure that there is no accidental discharge;
- There will be no mixer washings or excess concrete discharged on site. All excess concrete is to be removed from the Proposed Development Site and all washout of concrete chutes to be captured in a tank which shall be removed offsite for disposal at an authorised wastewater treatment facility;
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area and care;
- Silt traps and settlement ponds will be established in appropriate locations of the Proposed Development Site to treat any construction-related run-off during prior to discharge. These will be regularly inspected and maintained during works;
- Any refuelling and oil and lubricant changes will take place in designated bunded areas;

- All chemical drums will be quality approved and manufactured to a recognised standard. If drums are to be moved around the Proposed Development Site, they will be secured and moved on spill pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment;
- All containment and treatment facilities will be regularly inspected and maintained;
- All mobile fuel bowsers will carry a spill kit and operatives must have spill response training. All fuel containing equipment such as portable generators shall be placed on drip trays. All fuels and chemicals required to be stored on-site will be clearly marked;
- Refuelling of plant and machinery on site shall take place in a designated, bunded
- Implementation of response measures to potential pollution incidents;
- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures in the event of accidental fuel spillages and will be trained in spill clean-up and containment procedures;
- All trucks will have a built-on tarpaulin that will cover excavated material as it is being hauled offsite and wheel wash facilities will be provided at all site egress points;
- Water supplies will be recycled for use in the wheel wash. All waters will be drained through appropriate filter material prior to discharge to foul sewer from the construction site;
- If required a documented procedure for contaminated material will be prepared and adopted by the appointed contractor prior to excavation works commencing on site. These documents will detail how potentially contaminated material will be dealt with during the excavation phase;
- Implementation of CDWMP to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt); and
- Monitoring shall be carried out on surface water discharge (if necessary and as specified in any Discharge Licence associated with the construction phase of the project).

6.5.5 Control of Emissions to Soil and Groundwater

Shallow groundwater may be encountered during the construction works in particular during foundation excavations. Where water must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e. CIRIA – C750) and regulatory consents.

Measures set out in Section 6.5.4.1 Fuel and Chemical Storage will serve to protect soil and groundwater.

All ready-mixed concrete shall be delivered to the Proposed Development Site by truck. Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a tank to be removed from the Proposed Development Site.

A suitable risk assessment for wet concreting will be completed prior to works being carried out.

The Contractor is to ensure that no contaminated water/liquids leave the Proposed Development Site as surface water run-off enter the local storm drainage system to the Liffey

and Dublin Bay. Excavations and potentially contaminated stockpiled soils will be constructed/located/sheeted in a manner that ensures contaminated water generation is prevented.

Water supply to the Proposed Development Site will be provided by temporary connection to the public watermains. A temporary connection for foul water drainage will be made to the public network in agreement with permission obtained from Irish Water. Any such permission will be subject to conditions regarding the flow (rates of discharge, quantity etc.); effluent quality prior to discharge and pre-treatment (e.g. settlement/filtration, hydrocarbon separation etc.) and monitoring requirements.

In the event that excavated and stockpiled soils contain potentially contaminated material, stockpiles will be constructed/located/sheeted in a manner that ensures that contaminated water generation is prevented.

6.5.5.1 Control of Stockpiles

Any surplus soil generated during excavation works will be segregated and temporarily stored onsite (pending removal or for re-use onsite) in accordance with a pre-determined segregation and storage strategy to be developed by the Contractor as part of the CDWMP.

While material is being stored pending re-use on site or removal from the Proposed Development Site, excavated soil for re-use/recovery/disposal shall be stockpiled as follows:

- A suitable temporary storage area shall be identified and designated;
- All stockpiles shall be assigned a stockpile number;
- Topsoil will be stored separately from other soil types;
- Soil waste categories will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on site drawings;
- Any waste and surplus construction and demolition material shall be screened from the stockpiled soils and segregated separately;
- Stockpiles will be lightly compacted at the end of the working day;
- Any excavated soil (if required to be stockpiled) shall be stockpiled only on hard-standing or high-grade polythene sheeting to prevent cross-contamination with the soil below; and
- Soil stockpiles shall be sealed to prevent run-off of rainwater and leaching of potential contaminants from the stockpiled material generation and/or the generation of dust.

An excavation/stockpile register shall be maintained on site showing at least the following information:

- Stockpile number;
- Origin (i.e. location and depth of excavation);
- Approximate volume of stockpile;
- Date of creation;
- Description and Classification of material;
- Date sampled;
- Date removed from site;
- Disposal/recovery destination; and

- Photograph;

Waste storage, fuel storage and stockpiling and movement are to be undertaken with a view to protecting any essential services (electricity, water etc.) and with a view to protecting existing surface water drains and groundwater quality boreholes (if applicable); and

Waste will be stored onsite, including concrete, asphalt, pile arisings and soil stockpiles, in such a manner as to:

- Prevent environmental pollution (bundled and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required);
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery; and
- Prevent hazards to site workers and the general public during construction phase (largely noise, vibration and dust).

6.5.6 Control of Waste and Waste Management

Waste management during the construction phase will be managed in accordance with the CMP and the specific CDWMP for the Proposed Development. Waste will be managed in compliance with the Waste Management Act 2006, as amended and all subordinate legislation.

6.5.7 Control of Impacts on Biodiversity

The following construction controls are outlined in relation to key ecological receptors, where the predicted impact of dust deposition, noise and emissions to ground or surface water and soils can be minimised or eliminated, as follows:

- An Ecological Clerk of Works will be appointed as appropriate throughout the construction phase of the development;
- Procedures must be implemented to control any potential release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters and where necessary the use of standard best practice controls such as interceptors, silt traps, settlement ponds and filter materials, provision of exclusion zones and barriers, inspection and maintenance;
- Noise control measures as in Section 6.5.1 above be adhered to, to protect potential noise sensitive receptors; and
- Should invasive species be found onsite, vegetation will be removed by a qualified Contractor prior to site works commencing in accordance with legislative requirements and under NPWS licence where appropriate (e.g. removal of Japanese Knotweed).

6.5.8 Control of Impacts on Archaeology and Heritage

All ground disturbances associated with the Proposed Development shall be monitored and assessed by a suitably qualified project archaeologist. Mitigation measures, such as in-situ preservation, will be engaged upon discovery of features of archaeological or cultural importance.

7 SITE TIDINESS & HOUSEKEEPING

All contractors will be required to operate on-site using good housekeeping practices. Work areas shall be left in a clean state by construction personnel. The CMT contractor induction communicates the requirement for site housekeeping and tidiness.

Further to measures described in the previous sections, the following measures shall be implemented to maintain site tidiness.

- Construction works will be carried out according to a defined schedule agreed with CMT, with regard to the hours of work outlined in the CMP. Any delays or extensions required will be notified at the earliest opportunity to CMT;
- Contractors will ensure that road edges and footpaths are swept on a regular basis; and
- All Contractors shall be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction.

The Proposed Development Site will be left in a safe condition.

8 EMERGENCY PLANNING AND RESPONSE

8.1 Environmental Emergency

A designated Contractor will be appointed for the project to ensure that installation works are carried out consistent with all existing emergency response plans and procedures.

The emergency management procedure ensures that emergencies such as fires, explosions, accidents, leaks, sabotage or emergencies caused by force majeure occur as little as possible; if they do, however, occur, it ensures that all countermeasures proceed in a controlled manner so that greater damages are avoided and the possible effects upon persons, the environment and property are avoided or limited. These procedures are as follows:

- Emergency preparedness and response procedure;
- Incident investigation procedure;
- Nonconformity, Corrective Action and Preventative Action;
- Spillage Containment Procedure; and
- Pollution Prevention Programme.

The project team appreciates that occasionally incidents arise whereby it is impossible or impractical to comply with all the requirements. In these emergency situations, as much notice as possible about the works will be given to the appropriate authorities and neighbours.

A procedure for Environmental Emergency Preparedness and Response will be developed prior to commencement of construction and can be implemented by the CMT in order to ensure to minimise environmental impacts. An environmental emergency at the Proposed Development Site may include;

- Discovery of a fire within the Proposed Development Site boundary;
- Uncontained spillage / leakage / loss of containment action; and
- Discharge concentration of potential pollutants in excess of environmental trigger levels.

The general required emergency response actions will be posted at strategic locations, such as the Proposed Development Site entrance, canteen and near the entrances to buildings.

As an example of emergency response actions required, in the event of a spillage, the following procedure shall be followed:

1. IF SAFE (USE PPE), stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
2. IF SAFE (USE PPE), contain the spill using the absorbent spills material provided. Do not spread or flush away the spill.
3. Cover or bund off any vulnerable areas where appropriate.
4. If possible, clean up as much as possible using the absorbent spills materials.
5. Do not hose the spillage down or use any detergents.

6. Contain any used absorbent material so that further contamination is limited.
7. Notify the Environmental Officer so that used absorbent material can be disposed of using a licensed waste contractor.
8. An accident investigation should be performed in accordance with procedures and the report sent to the Environmental Officer.

In the event of a spillage or other incident, steps will be taken to prevent environmental pollution, for example through protection of drains by use of drain covers or booms, use absorbent granules following an oil / chemical spill and turning off equipment or other sources of noise or dust.

Once the situation has been rectified, full details about the incident and remedial actions undertaken will be provided to the local authority and all other relevant authorities and recorded in the site environmental register. This site environmental register will be a register of regulatory, legal and other requirements, and this will be developed to summarise the environmental legislation, (as well as other requirements) that the project must adhere to. This legislation will be available through the construction manager's office on site. This register will be a controlled document, and as such will be reviewed and updated on a minimum six-monthly basis.

8.2 Environmental Regulatory Requirements

A register of regulatory, legal and other requirements will be developed by the Contractor. This will be a summary list of the major environmental legislation and other requirements to which the project must subscribe.

A typical register of environmental legislation is divided into a number of categories, which include:

- General Environmental Legislation;
- Flora & Fauna;
- Emissions to Air;
- Emissions to Water & Groundwater;
- Waste Management; and
- Noise & Vibration.

For each piece of legislation, the following information is provided:

- Index Number;
- Title of Legislation;
- Summary of Legislation; and
- Relevance.

All legislation included in this Register can be readily accessed on <http://www.irishstatutebook.ie> or will be available through the construction manager's office.

The Register of Legislation will be reviewed and updated on a minimum six-monthly basis. This is a controlled document and as such will comply with all the requirements of the Contractor document control procedures.

Emergency Service Contact Numbers	Contact
Ambulance	999 or 112
Fire Brigade	999 or 112
Dún Laoghaire – Rathdown County Council (DLRCC) Environment Department	01 2054700
EPA	Regional Inspectorate Dublin- (01) 268 0100
HSE – Dún Laoghaire Local Health Office	(01) 284 3579
Inland Fisheries Ireland	(01) 8842693
ESB Emergency	1850 372 999
Gas Emergency	1850 20 50 50
First Aid Officer	To be assigned
National Monuments Service, Department of the Arts, Heritage and the Gaeltacht	(01) 888 2000
National Parks & Wildlife Service	Eastern Division Divisional Manager: (076) 100 2654 Eastern Division Ecologist: (077) 100 2502
Health and Safety Authority	1890 289 389
Emergency Department St Michael's Hospital	(01) 663 9815
Dun Laoghaire District Garda Station,	(01) 666 5000

Table 8-1 Emergency Contacts

9 REFERENCES

British Standard Institution (2009). BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. British Standards Limited.

Best Practice Guidelines (BPG CS005). Oil Storage Guidelines.

Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites - Guidance for Consultants and Contractors.

Construction Industry Research and Information Association (CIRIA), 2006. Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006) (C648).

Construction Industry Research and Information Association (CIRIA), 2005. Environmental Good Practice on Site (C650).

Construction Industry Research and Information Association (CIRIA), 2007. The SUDS Manual (C697).

Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG) UK.

National Roads Authority, 2004. Guidelines for the Treatment of Noise and Vibration in National Road Schemes.