



Outline Construction Environmental Management Plan (OCEMP)

FOR
PROPOSED DEVELOPMENT
AT
CLAREMONT, HOWTH ROAD, HOWTH, CO.
DUBLIN

October 2019

ON BEHALF OF
ATLAS GP LTD.

Prepared by

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DOCUMENT CONTROL SHEET

Client	Atlas GP Ltd.
Project Title	Proposed Development at Claremont, Howth Road, Howth Co, Dublin
Document Title	Outline Construction Environmental Management Plan (OCEMP)

Revision	Status	Author(s)	Reviewed	Approved	Issue Date
3.0	Issued for Planning	M.Foran Environmental Consultant	G. Free Director	G. Free Director	22/11/2019

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1 INTRODUCTION

This Outline Construction Environmental Management Plan (OCEMP) has been prepared by Enviroguide Consulting on behalf of Atlas GP Ltd. for a Proposed Development located at the former Techrete site on the Howth Road, Howth, Co. Dublin (The Project). This OCEMP describes the proposed 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 OCEMP 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 OCEMP 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 OCEMP 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
- Other Relevant Personnel

1.1 Objective/Purpose

The purpose of an OCEMP 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 Outline CEMP (OCEMP)

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

Compliance with the OCEMP, the procedures, work practices and controls is mandatory and must be adhered to by all personnel and contractors employed on the Construction / roll-out Phase of the Proposed Development. This OCEMP seeks to promote best environmental practices on-site for the duration of the Construction Phase.

This OCEMP will:

- Provide an outline plan for achieving and implementing the construction related mitigation measures identified in the Environmental Impact Assessment Report (EIAR).
- Comply with all relevant conditions attached to the Grant of Planning Permission by An Bord Pleanála (once issued).
- Promote best environmental on-site practices for the duration of the Construction Phase.

1.3 'Live document'

This OCEMP is considered a 'live' document and as such will be reviewed on a regular basis. Updates to this OCEMP 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 OCEMP will be audited throughout the project roll-out phase to ensure compliance. All documentation required by this OCEMP 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 a site bounded to the south by the Howth Road, to the east by a private dwelling, to the north by the DART line, and to the west by Local Authority lands. The site incorporates the former Techrete manufacturing facility, the former Beshoff's Motors showroom, and the former Howth Garden Centre.

The proposed development will include the demolition of all structures on site (c.8,162sqm GFA) and excavation of a basement. The proposed development comprises of the provision of a mixed use development of residential, retail/restaurant/cafe uses and a creche in 4 no. blocks (A to D), over part basement. Blocks A, B, C and D with a height up to a maximum of seven storeys of apartments over lower ground floor and basement car parking levels (a total of eight storeys over basement level). The residential component will consist of 512 no. residential units. The proposed development includes the provision of two vehicular entrances on to Howth Road, excavation of basement to provide for car parking, plant, waste storage and ancillary use. Additional car parking spaces shall be provided at lower ground floor level. A total of 439 no. car parking spaces and 1,335 no. bicycle parking spaces, including 49 no. bicycle spaces to cater for the retail units and creche shall be provided. One vehicular access is located at Block A, serving car parking spaces. The second is at Block C, providing access

to the basement, residential and retail parking, and a service area for the retail units. A service route will be provided along part of the northern perimeter of the site with access from the western end of the site at a junction with Howth Road and at the main vehicular entrance at Block C;

A publicly accessible walkway/cycleway to the north of the site shall be provided at podium level. A civic plaza will be provided between Blocks D and C, and a landscaped park to the west of Block A. A channel to the sea for the Bloody Stream with associated riparian strip shall be incorporated as a feature within a designed open space between Blocks A and B. Communal gardens will be provided for Blocks A, B and C;

The residential component consists of 512 no. residential units, which includes 4 no. studio, 222 no. one bed, 276 no. two bed, 10 no. three bed apartments, and communal facilities of 708 sqm. Ground floor units onto the Howth Road will have own door access. The units will be served by balconies or terraces on all elevations;

Block A, with a maximum height of seven storeys of apartments over lower ground level car park (a total of eight storeys), will provide for 234 residential units, with residents' amenities to include a gym, residents' lounge, residents' support office, and 2 no. residents' multi-purpose rooms. Block B, with a maximum height of seven storeys of apartments over lower ground floor and basement car park (a total of eight storeys over basement), shall provide for 154 no. units, residents' lounge, residents' multi-purpose room, and creche of 236 sqm with outdoor play area. Own door access will be provided at ground floor. Block C, with a maximum height of seven storeys over basement car parking (a total of seven storeys) will provide for 83 no. residential units in two wings over a retail unit and Block D, with a maximum of 6 storeys over basement, shall provide for 41 no. residential units over retail units;

The commercial component in Blocks C and D consists of 4 no. units with 2,637 sqm gross floor area. In Block C, it consists of a 1,705 sqm anchor unit, accessed from the civic plaza. In Block D, it consists of a restaurant (243 sqm) and retail unit (603 sqm) and café (86 sqm). The restaurant and retail units are accessed from Howth Road, and the café is accessed from the upper level of the civic plaza.

The proposed development includes the provision of public and communal open space, green roofs, landscaping, boundary treatments, set down locations, substations, meter rooms, waste management and all ancillary site works, including upgrading of the public paths along Howth Road and relocation of bus stop in new setback with a bus shelter. Two set down areas are provided at either end of the site;

The gross floor area of the proposed development is 48,252 sqm (excluding enclosed car parking) on a site of 2.68 ha.

FIGURE 1 SITE LOCATION

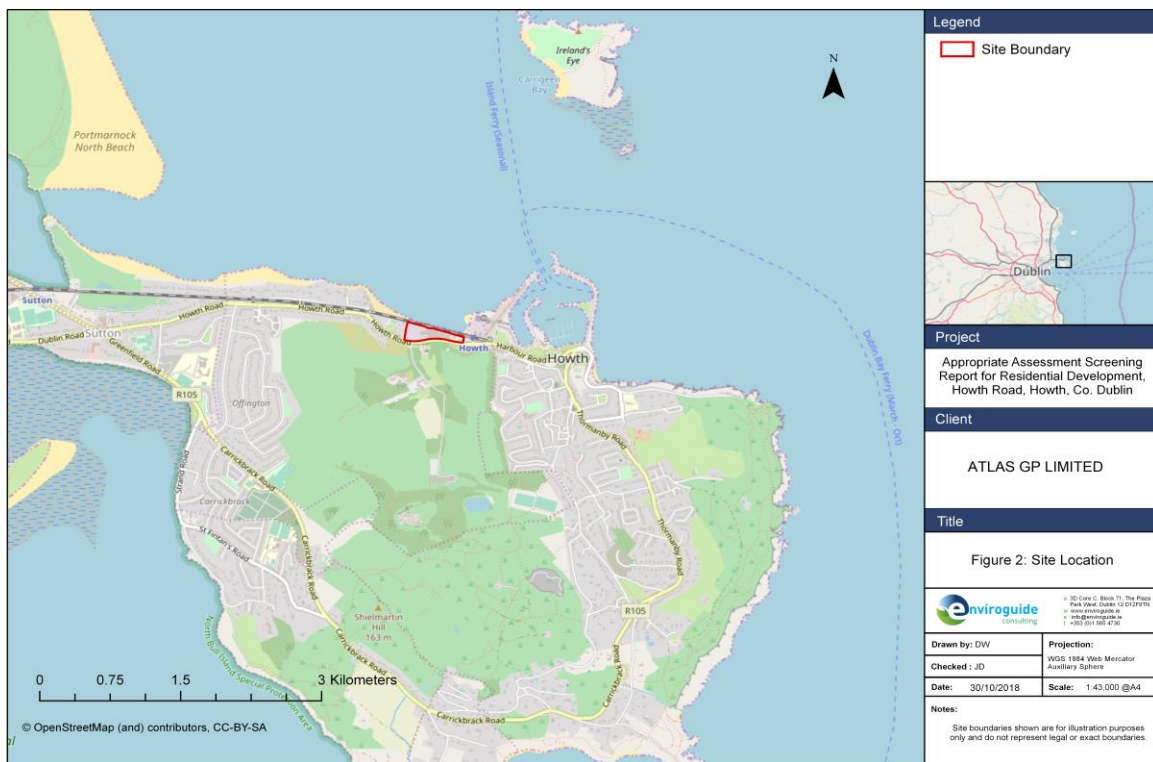


FIGURE 2 SITE LAYOUT



3 CONSTRUCTION SCHEDULE

3.1 Construction Phasing

The Construction sequencing is detailed in the Construction Management Plan (CMP) for this development. The demolition and construction phases are expected to take place over a period of approximately 40 months.

3.2 Working Hours

It is envisaged that primarily standard working hours for the construction industry will be adhered to during the course of the construction process (i.e. working hours normally permitted by Fingal County Council include 08.00 – 19.00 Monday to Friday and 08.00 – 14.00 Saturdays) or as conditioned/agreed with Fingal County Council.

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

3.3 Site Construction Compound

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 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; and
- 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;
- Co-ordinate environmental planning of CMT activities to comply with environmental authorities requirements and with minimum risk to the environment.

4.1.3 Environmental Officer

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

- Ensuring that the requirements of the OCEMP 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 OCEMP 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; and
- Advising site management on environmental matters.
- Be aware of any potential environmental risks relating to the Contractors and bring these to the notice of the appropriate management; and
- Ensure materials/waste register is completed
- Maintenance of all environmental related documentation

4.1.4 Project Environmental Consultant

An 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 Environmental Impacts Statement (EIAR) Mitigation Measures;
- 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;
- Investigating incidents of significant, potential or actual environmental damage, ensure corrective actions are carried out and recommend means to prevent recurrence; and

4.1.5 Project Archaeologist Clerk of Works

The Project Archaeology Clerk of Works (if required) will report to the Environmental Officer and is responsible for advising on all archaeological monitoring activities, conducting watching briefs and distributing information relevant to monitoring. The responsibilities and duties of the Project Archaeologist will include the following;

- Monitor all ground disturbance works associated with the construction of the development;
- Ensure the appropriate course of action is taken in the event that archaeological material is discovered during the works;
- Liaison with the CMT throughout the Construction Phase of the project; and
- Liaison with the Department Applications Unit, National Monuments Service, Department of Arts, Heritage and Gaeltacht and the Fingal County Council archaeologist as required.

4.1.6 Project Ecologist Clerk of Works

The Project Ecologist Clerk of Works will report to the Environmental Officer and is responsible for the protection of sensitive habitats and species encountered during the construction phase of the project. The responsibilities and duties of the Project Ecologist will include the following;

- Provision of specialist input and supervision, where necessary, of construction activities in relation to habitats and species;
- Provision of specialist advice on ecological monitoring, and conduct surveys, monitoring and site inspections as set out in the EIAR and Fingal County Council Planning Conditions; and
- Liaison with the National Parks and Wildlife Service (NPWS) as required.

It should be noted that specialist ecologist skills will be obtained if and when required such as a bat specialist.

4.1.7 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.

4.1.8 Site Supervisors

All CMT 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 CMT Environmental Officer;
- Ensure that environmental matters are taken into account at all times;
- Be aware of any potential environmental risks relating to the site, plant or materials to be used on the premises and bring these to the notice of the appropriate management;
- Ensure that any plant is environmentally suited to the task in hand;

4.1.9 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 CMT and the Environmental Officer in the implementation and development of the CEMP at the 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 site; and
- Adhere fully to the requirements of the site environmental rules.

5 PROJECT ENVIRONMENTAL POLICY

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

- Carrying 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.
- Implement this Policy through the successful operation of the CEMP.

This policy will be reviewed periodically, taking into account current and potential future business 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 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, bunded 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 contractor;
- Do not drive plant or machinery outside the authorised working boundaries of the site.

- IF IN DOUBT, ASK THE CMT 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 EHS information points at the site.

The training of the site construction staff is the responsibility of the CMT. 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 CMT.

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 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 Construction Management Team (CMT).

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; and
- Investigative and follow -up actions.
- 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

6.1 Potential Impacts of the Development

The EIAR carried out for the Proposed Development identifies potential environmental impacts on the receiving environment relating to environmental receptors. The OCEMP is designed to implement mitigation measures to control impacts relating to:

- Air
- Water
- Soil and Geology
- Noise and vibration

- Biodiversity
- Archaeology

A Natura Impact Statement also accompanies the planning application and sets out mitigation measures for the protection of the Baldoyle Bay SAC.

The Operational Controls set out in this OCEMP address the mitigation measures in both the EIAR and the NIS.

This OCEMP is to be read in conjunction with the mitigation measures as set out in the Environmental Impact Assessment Report (EIAR); the Natura Impact Statement (NIS) and the following Consultant reports relating to the proposed development:

- Barret Mahony Consulting Engineers Civil and Structural, October 2019. Construction Management Plan. (CMP)
- Barret Mahony Consulting Engineers Civil and Structural, October 2019. Construction and Demolition Waste Management Plan. (CDWMP)
- Golder Associates Ireland Limited, October 2019. Materials Management & Remedial Strategy Plan Claremont Development Site, Howth;
- Golder Associates Ireland Limited, October 2019. Human Health Risk Assessment Claremont Development Site, Howth;
- Golder Associates Ireland Limited, October 2019. Controlled Waters Risk Assessment Claremont Development Site, Howth; and
- Golder Associates Ireland Limited, October 2019. Interpretative Ground Investigation Report Claremont Development Site, Howth.
- Minerex, 2019 Planning stage dewatering plan, risk assessment and mitigation measures

The Site is a brownfield site, with historical contaminated land, and hotspots of contamination have been identified as documented in Golder Associates Ireland Limited, October 2019. *Materials Management & Remedial Strategy Plan Claremont Development Site, Howth* (Golder, 2019).

The OCEMP will take into account the importance of the appropriate management of excavated contaminated material and the management of contaminated water.

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

This OCEMP will also take into account environmental sensitivities in particular in relation to existing contaminated land and the protection of surface and ground water.

6.2 Conditions of Planning Permission

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

6.3 EIAR and NIS Mitigation Measures

An EIAR has been prepared for the Proposed Development which identifies a series of mitigation measures to eliminate or minimise the environmental impact of the development.

The EIAR has also identified mitigation measures for the operational phase of the development. These measures are outside the scope of the CEMP. It will be the responsibility of the CMT to ensure full implementation of all EIS mitigation measures identified.

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

6.4 Implementation of Controls

The CMT, the respective Construction Manager and all contractors shall be responsible for the implementation of control measures as identified in Section 6.6.

Contractors will comply with the requirements of the CMT 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. Requirements and responsibilities will be reviewed with each Contractor at inception meetings and at weekly progress update meetings.

Any contractor submitting a tender for the project must inform the CMT of 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;
- 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 site induction provided by the CMT, contractors 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

The Construction Manager 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 are reported and recorded.

Complaints and Follow up Actions on the construction site will be managed by the CMT and contractors will ensure that all complaints are recorded according to CMT requirements.

Each contractor will be responsible for ensuring that a full record and copy of all Safety Data Sheets (SDS) 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 SDSs held by the contractors.

The CMT 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 CMT 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 CMT 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.

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 OCEMP.

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;
- An incident or potential incident.

All corrective action requests will be numbered and logged.

6.5 Operation Controls

6.5.1 Control of Noise

A Construction Noise and Vibration Management Plan will be designed and implemented by a qualified noise consultant for the construction process. The contractor will ensure that all best practice noise and vibration control methods will be used as necessary in order to ensure impacts to nearby residential noise sensitive locations are not significant.

Noise monitoring will also be carried out, as required by Fingal County Council, during periods of increased noise (e.g.: Rock breaking and Demolition).

The contract documents will clearly specify the construction noise criteria included in this plan which the construction works must operate within. The Contractor undertaking the construction of the works will be obliged to take specific noise abatement measures and comply with the recommendations of BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites - Noise and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001. These measures will ensure that:

- No plant used on site will be permitted to cause an ongoing public nuisance due to noise;
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract;
- Compressors will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers;
- Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use;
- Any plant, such as generators or pumps that is required to operate outside of normal permitted working hours will be surrounded by an acoustic enclosure or portable screen;

BS 5228 -1:2009+A1 2014 includes guidance on several aspects of construction site practices, which include, but are not limited to:

- Selection of quiet plant
- Control of noise sources
- Screening
- Hours of work
- Liaison with the public

Specific control measures relating to construction activities undertaken by the contractor will be set out within the construction management plan (CMP) to be prepared in advance of the works.

Noise control measures will include the selection of quiet plant, enclosures and screens around noise sources, limiting the hours of work and noise monitoring. The

contractor will be required to conduct construction noise predictions prior to works taking place and put in place the most appropriate noise control measures depending on the level of noise reduction required at any one location.

All construction works will be required to operate within the Construction Noise Limits Outlined in Table 7.4 of Chapter 7 Noise and Vibration of the EIAR as follows:

Maximum Permissible Noise Levels at the Facade of Dwellings during Construction

Days and Times	Noise Levels (dB re. 2×10^{-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*

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

6.5.1.1 Noise Sensitive Locations

The site is bounded by the Dart line to the North, community park to the West, private residences to the East and opposite Howth Road is the golf course along with single private residences. Steps will be taken to ensure that any noise arising will be adequately mitigated. It should be noted that as part of the scheme design due consideration has been given to the issue of noise and physical and operational measures have been proposed to mitigate potential noise impacts associated with the site.

6.5.1.2 Baseline Noise Survey

A baseline noise monitoring programme will be completed prior to construction works commencing. Noise monitoring will be carried out at specific locations. Survey details, procedures and results of this aspect of the baseline noise monitoring programme will be in accordance

with ISO 1996-2:2017 'Acoustics — Description, measurement and assessment of environmental noise — Part 2: Determination of sound pressure levels'.

6.5.1.3 Assessment of Noise Effects

Consideration will also be given to advice in relation to establishing significant construction noise effects as set out in BS5228. During the construction and demolition 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'.

6.5.1.4 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 6.5.1.5 -6.5.1.11 below.

6.5.1.5 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 site. The least noisy item should be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not that item can be replaced with a quieter alternative.

6.5.1.6 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, the following best practice migration measures should be considered:

- 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 piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud. 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;
- 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.

6.5.1.7 Screening to control spread of noise

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to other forms of noise control. The effectiveness of a noise screen will depend on the height and length of the screen, its mass, and its position relative to both the source and receiver.

The length of the screen should in practice be at least five times the height, however, if shorter sections are necessary then the ends of the screen will be wrapped around the source.

BS 5228 -1:2009+A1 states that on level sites the screen should be placed as close as possible to either the source or the receiver. The construction of the barrier will be such that there are no gaps or openings at joints in the screen material.

In most practical situations the effectiveness of the screen is limited by the sound transmission over the top of the barrier rather than the transmission through the barrier itself. In practice, screens constructed of materials with a mass per unit of surface area greater than 10kg/m² will give adequate sound insulation performance.

Construction noise calculations have assumed a partial line of sight (-5dB) is achieved using a solid 2.4m high standard construction site hoarding. It will be a requirement for works occurring in proximity to the closest noise sensitive locations (NSL1) that the line of sight is further blocked such that a reduction of at least 10dB is achieved between the noise sensitive façade and construction activities. A reduction of this order will be achieved using a higher perimeter screen, using localised screening around specific items of plant, or similar approved methods.

In addition, careful planning of the site layout will also be carried out. The placement of temporary site buildings such as offices and stores between the site and sensitive locations can provide a good level of noise screening during the phasing of works.

6.5.1.8 Liaison with the Public

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

6.5.1.9 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.

6.5.1.10 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 site with regard to the following:

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

6.5.1.11 Noise Control Audits

Noise control audits will be conducted at regular intervals through the construction phase of the development. In the first instance, it is envisaged that such audits will take place on a

monthly basis. 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 7.5 of Chapter 7 Noise and Vibration of the EIAR as follows:

Recommended Construction Vibration Threshold for Control of Building Damage

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

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 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;
- Offsite fabrication;
- 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 Communications

A stakeholder communications plan will be implemented before construction starts that includes community engagement before work commences on the site.

The name and contact details of person accountable for air quality and dust issues will be displayed on the site boundary.

The head or regional office contact information will be displayed on the site boundary.

A Dust Management Plan (DMP) will be formulated for the construction phase of the project, as construction activities will generate dust emissions. The potential for significant dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive receptors and whether the wind can carry the dust to these receptors. The majority of any dust produced will fall out and be deposited close to the potential source and any impacts from dust deposition will typically be within 200m of the construction area. The objective of dust control at the site 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, the UK (BRE 2003), (The Scottish Office 1996) (UK Office of Deputy Prime Minister 2002) and the USA (USEPA 1997), (USEPA 1986).

Effective site management regarding dust emissions will be ensured by the formulation of a Dust Management Plan (DMP) for the site the contractor will be required to put in place a DMP.

The key features of the DMP will be:

- The specification of a site policy on dust including a DMP;
- The identification of the site management responsibilities for dust;
- The development of documented systems for managing site practices and implementing management controls; and
- The development of means by which the performance of the DMP can be assessed. The DMP may include monitoring of dust deposition, dust flux, real-time PM₁₀ continuous monitoring and/or visual inspections

6.5.3.2 Dust Control Measures -General

The aim is to ensure good site management by avoiding dust becoming airborne at source.

At the Construction Phase (Phase I, II and III), the siting of construction activities and storage piles will take note of the location of sensitive receptors and prevailing wind directions (as per the submitted planning documentation and EIAR on Noise, Vibration and Air Quality provided by AWN Consulting and on Microclimate as provided by B-Fluid) 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, technical staff shall be on site and available to implement dust control methods as appropriate;
- Complaint registers will be maintained on site detailing all telephone calls and letters of complaint 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, subcontractors 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 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.

6.5.3.3 Dust Control -Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from 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 or fence stockpiles to prevent wind whipping.

6.5.3.4 Dust Control – Site Roads and Track Out

Site roads (particularly unpaved) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing

dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25 to 80%.

- A speed restriction of 15 km/hr will be applied as an effective control measure for dust for on-site vehicles.
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Vehicles entering and leaving sites will be covered to prevent escape of materials during transport.
- On-site haul routes will be inspected for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- All inspections of haul routes will be inspected and any subsequent action in a site log book.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- A wheel washing system will be implemented (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least 10 m from receptors where possible.

Bowsers will be available during periods of dry weather throughout the construction period. Research has found that the effect of watering is to reduce dust emissions by 50%. The bower will be used during dry periods 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 roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

6.5.3.5 Dust Control - Land Clearing / Earthworks

Land clearing / earth-moving during periods of high winds and dry weather conditions can be a significant source of dust.

- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will be used to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the stability of the soil and thus suppress dust.

6.5.3.6 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 on site 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 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.

6.5.3.7 Dust Control – Public Roads

Spillage and blow-off of debris, aggregates and fine material onto public roads should 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 at all times to restrict the escape of dust;
- Public roads outside the site shall be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. A road sweeper will be deployed to ensure that public roads are kept free of debris; and
- The wheels of all Lorries will be washed / cleaned prior to leaving the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain.

6.5.3.8 Dust Control -Operating Vehicles / Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 20 kph haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)

6.5.3.9 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 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.
- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

6.5.3.10 Dust Control -Waste Management

- Bonfires and burning of waste materials are prohibited.

6.5.3.11 Dust Control -Measures Specific to Demolition

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.

- Avoid explosive blasting, using appropriate manual or mechanical alternatives.
- Bag and remove any biological debris or damp down such material before demolition.

6.5.3.12 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.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

6.5.3.13 Dust Control -Site Management

- Regular inspections of the 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.

- Regular liaison meetings will be held with other high risk construction sites within 500 m of the 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 off-site transport/deliveries which might be using the same strategic road network routes.

6.5.3.14 Dust Monitoring

Daily on-site and off-site 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 site boundary, with cleaning to be provided if necessary.

Regular site inspections will be carried out to monitor compliance with the DMP, 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.

Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction. Construction Phase dust monitoring will be put in place to ensure dust mitigation measures are controlling emissions.

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

6.5.3.15 Dust Management Summary

The proactive control of fugitive dust it is necessary to ensure that the prevention of significant emissions, rather than an inefficient attempt to control them once they have been released, will contribute towards the achievement of no dust nuisance occurring during the construction phase. The key features with respect to control of dust emissions and nuisance dust will be:

- The implementation of a DMP which sets out a number of practical measures to control fugitive dust;
- The specification of a site policy on dust and the identification of the site management responsibilities for dust issues;
- The development of a documented system for managing site practices with regard to dust control;
- The development of a means by which the performance of the DMP can be monitored and assessed; and
- The specification of the measures to be taken to control dust emissions before it occurs and effective measures to deal with any complaints received.

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
- Waste storage areas

There will be no washdown facilities for plant and equipment on site.

Fuel, oils and chemicals will be stored on an impervious base within a bund remote from any surface water drains or locations.

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 facility.

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 Fingal County Council in this regard.

Personnel working on the site will be trained in the implementation of environmental control and emergency procedures. This Outline 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.*
- *Construction Industry Research and Information Association 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)*

Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

The following mitigation measures have been proposed 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 specific mitigation measures, for release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters control:

- Specific measures to culvert the Bloody Stream to prevent the release of sediment and contaminants to the Bloody Stream and the Baldoyle Bay SAC
- The cementitious grout used during the construction of the basement and the riparian strip will avoid any contamination of groundwater through the use of appropriate design and methods implemented by the Contractor and in accordance with industry standards.
- Weather conditions will be taken into account when planning construction activities to minimise risk of run-off from the site;
- Prevailing weather and environmental conditions will be taken into account prior to the pouring of cementitious materials for the works adjacent to the Bloody Stream and/or surface water drainage features, or drainage features connected to same to ensure that this does not happen during adverse weather conditions or during heavy rainfall periods.
- Pumping of concrete will be monitored 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 site and all washout of concrete chutes to be captured in a tank which shall be removed off site for disposal at an authorised waste water treatment facility.
- Any fuels or chemicals (including hydrocarbons or any polluting chemicals) will be stored in a bunded area remote from the Bloody Stream and local surface water network and care and attention taken during refuelling and maintenance operations;
- All chemical drums to be quality approved and manufactured to a recognised standard. If drums are to be moved around the Site, they will be secured and moved on spill

pallets. Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

- Temporary hydrocarbon interceptor facilities will be installed and maintained where site works involve the discharge of drainage water to foul sewer;
- 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 area which shall drain to a hydrocarbon interceptor.
- 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 off-site 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;
- The removal of any made ground material, which may be contaminated, from the construction site and transportation to an appropriate licenced facility shall be carried out in accordance with the Waste Management Act 1996 as amended, best practice and guidelines and the CDWMP.
- 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; and
- Implementation of CDWMP to minimise waste and ensure correct handling, storage and disposal of waste (most notably wet concrete, pile arisings and asphalt).

- 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);
- During the excavation phase, the Bloody stream will be re-routed. The stream will continue to flow underground in a 750mm diameter pipe diversion until the development is complete. This will eliminate the possibility of contamination from the works above. To ensure no damage from plant/activity above the pipes will be encased in 150mm concrete. The riparian strip to accommodate the flow of the Bloody Stream will be one of the last areas to be completed. This will involve construction of an open concrete channel spanning the breadth of the site, underground drainage connections at either ends, a settlement chamber and landscaped banks on either side of the channel.

6.5.5 Control of Emissions to Soil and Groundwater

Shallow groundwater may be encountered during the construction works in particular the basement excavation. 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.

Water will not be discharged to open water courses (e.g. the Bloody Stream or shore) and will be disposed to foul sewer via hydrocarbon interceptor.

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

The site is underlain by groundwater, impacted as a result of extended periods in contact with contaminated soils.

As part of their works the contractor will allow for working in the wet, as well as dewatering of all excavations to allow continual progression of works.

This will encompass the construction of a secant pile wall around the basement excavation to allow dewatering and dry excavation.

The piling method will prevent introduction of a vertical conduit for contamination from shallower made ground.

Piling will be carried out in line with the proposed piling methodology as detailed in the CMP (BCME, 2019) to minimise the potential for introduction of any temporary conduit between contaminated materials and underlying groundwater.

Piles that require rock sockets will be drilled under bentonite or cased to rock head level, to ensure stability of the bore through the water bearing sands. Continuous flight augering (CFA) piles will be carefully monitored to ensure positive pressure in the concrete below the auger head as it is retracted to prevent overbreak or material falling into the bore.

The proposed piling methodology as detailed in the CMP will prevent any risk of dispersion of grout from the piling bore (e.g. through the use of bentonite or quick cure grout).

The piling method should include specification to prevent introduction of a vertical conduit for contamination from shallower made ground. (e.g. case bores).

The piling methodology will include the use of water compatible grout to avoid any contamination of groundwater

All ready-mixed concrete shall be delivered to the 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 site.

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

Excavations of soil containing contaminants are not expected to encounter much groundwater, however the removal of former underground storage / fuel tanks and the excavating out of any extended contaminant areas may necessitate appropriate dewatering to allow dry excavation by the Contractor.

The Contractor is to ensure that no contaminated water/liquids leave the site as surface water run-off or enter the local storm drainage system or direct discharge to the Baldoyle Bay SAC. Excavations and potentially contaminated stockpiled soils will be constructed/located/sheeted in a manner that ensures contaminated water generation is prevented.

Disposal to sewer will require a Discharge Licence issued under Section 16 of the Local Government (Water Pollution) Acts and Regulations and must be obtained from Irish Water. Any such discharge licence 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.

All dewatering will be undertaken in strict compliance with the Dewatering Plan designed by Minerex, 2019 for the project and the conditions of the discharge licence for the project.

All abstracted water will be pumped through a treatment system to remove elevated suspended solids, to lower pH and remove hydrocarbon sheen. The treated water will be discharged to foul sewer under licence from Irish Water (IW). There will be continuous automatic text alarmed monitoring of key parameters such as flow rate, pH and suspended solids.

A treatment system will be installed for the duration of the project to meet the requirements of the discharge licence but will typically include a number of stages of settlement and filtration to remove sludge, suspended solids, free-phase hydrocarbons (oils) and dissolved phase hydrocarbons. A monitoring programme will be implemented to ensure that water quality criteria set out in the discharge licence are achieved prior to discharging to the sewer.

Daily inspection of the treatment system to include all components such as holding tanks, and screening infrastructure. will be undertaken by the Environmental Manager to check for integrity and any signs of failure.

6.5.5.1 Control of Contaminated Soil

The Contractor will undertake their works such that all potentially contaminated hotspots will be removed.

The removal of contaminated soil will be supervised by a competent and qualified consultant.

Records will be maintained according to the waste records procedures set out in the CDWMP.

Excavation works will include excavation of identified hotspots of soil contaminated with small amounts of asbestos and other contaminants.

All contaminated soil excavation will be handled in accordance with the procedures outlined in the CDWMP, the Management of Stockpile sections of this document and the measures set out in the Golder Associates Ireland Limited, October 2019. *Materials Management & Remedial Strategy Plan Claremont Development Site, Howth.*

An excavation plan will be established by the contractor prior to the commencement of any excavation. The plan shall take into account the findings of the Site Investigation Reports produced by Golder Associates Ireland Limited and IGSL.

The procedures for stockpile management outlined in this OCEMP will be implemented for the management of excavated materials in order to protect ground and surface water and minimise airborne dust.

The importation of aggregates or topsoil for use in fill, landscaping etc. shall be subject to control procedures which shall include off-site assessment prior to acceptance, testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use from a structural engineering and geological point of view.

Contract and procurement procedures will be in place to ensure that all aggregates and fill material required for the development are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations.

Any unsuitable material identified prior to unloading / placement on-site shall be rejected and shall not gain access to the site.

6.5.5.2 Control of Stockpiles

Segregation and storage of wastes generated during works will be segregated and temporarily stored on site (pending removal or for re-use on site) in accordance with a pre-determined segregation and storage strategy to be developed by the Principal Contractor as part of their CMP.

While waste classification and acceptance at a waste facility is pending, excavated soil for 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;
- Soil waste categories will be individually segregated; and all segregation, storage & stockpiling locations will be clearly delineated on site drawings;
- Erroneous pieces of concrete shall be screened from the stockpiled soils and segregated separately;
- Non-hazardous and hazardous soil (if required to be stockpiled) shall be stockpiled only on hard-standing or high grade polythene sheeting to prevent cross-contamination of the soil below;
- 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;

When a stockpile has been sampled for classification purposes, it shall be considered to be complete and no more soil shall be added to that stockpile prior to disposal. 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 on site, 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).

6.5.5.3 Gas, Groundwater & Surface Water Monitoring

All gas, ground and surface water monitoring including monitoring of Baldoyle Bay will be carried out in line with the recommendations in Golder Associates Ireland Limited, October 2019. *Materials Management & Remedial Strategy Plan Claremont Development Site, Howth* and the detailed dewatering plant that will be developed for the construction phase.

Sentinel wells will be installed for the purposes of sampling gas and groundwater in order to monitor the impacts of the works and identify trends arising which may indicate appropriate measures to be undertaken.

In addition, the area of made ground in the south west corner of the basement excavation will continue to be monitored via the installed well until such time as the earthworks are complete.

Gas, groundwater and surface water monitoring and sampling/testing rounds will be undertaken, before, during and after the earthworks works; this will comprise:

- Pre-earthworks - 3no. weekly visits over a two month period;
- During earthworks – 1no. per month for duration of earthworks; and
- Post-earthworks – 3no. visits monthly post completion of earthworks.
- Results from the monitoring rounds will be provided in monthly reports to be completed and assessed against Tier 1 screening values and will comprise previous monitoring round (cumulative) datasets undertaken and allowing information to be graphically displayed for identification and review of trends.

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.

The removal of asbestos waste will be carried out in accordance with the Safety Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. The contractor will be required to develop a plan of work (POW) for asbestos removal prior to commencing demolition activities. This plan of work will specify how the ACM's will be removed, transported and disposed of. The POW will also have detailed of quantities and receipts for the quantities of ACMs taken off site. The plan of work must be submitted to the Health and Safety Authority 14 days in advance of the works commencing and as part of the notification of the project.

A competent independent analyst will be employed by the client to oversee the asbestos removal works and air monitoring and clearance testing will be undertaken as required by the regulations. All of these reports will be made available for inspection by the regulatory authorities.

6.5.7 Control of Impacts on Biodiversity

The following construction mitigation measures are proposed 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 further reduced by mitigation implementation, as follows:

- noise and dust control measures as detailed in this plan.
- areas for demolition and excavation will be clearly delineated to avoid accidental excavation or demolition.
- a project ecologist and environmental consultant shall be appointed as appropriate throughout the construction phase of the development.
- measures to address construction-related surface water discharges in order to control release of hydrocarbons, polluting chemicals, sediment/silt and contaminated waters i.e. temporary control and interceptor facilities, silt traps, silt fences, silt curtains, settlement ponds and filter materials, provision of exclusion zones and barriers, inspection and maintenance (as outlined in Section 6.5.4 Control of emissions to surface water). Dewatering of site to be carried out in accordance with the Minerex Dewatering plan and all water removed from site to be discharged to foul sewer under a discharge licence. These mitigation measures also ensure that there will be no impact on the

downstream European sites as well as Baldoyle Bay SAC as a consequence of construction-related surface water discharges;

- Measures to reduce impacts on Bats related to lighting and tree removal will include:
 - use of suitable lighting as detailed in Chapter 8 Biodiversity of the EIAR i.e. direction downwards of construction floodlights
 - any tree felling (if necessary) will take place in consultation with an arborist and the project ecologist;
 - Building demolition will take place as described in Chapter 8 Biodiversity of the EIAR namely, under the direction of a Bat Ecologist and under a derogation licence obtained from the NPWS if bats are found within the building.
- Vegetation clearance will take place outside the breeding bird season (i.e. start of September to end of February, inclusive) under the supervision of an ecologist to avoid any potential impact on breeding birds. Where this seasonal restriction cannot be observed, a check for active nests will be carried out immediately prior to any site clearance and repeated as required to ensure compliance to Irish wildlife law;
- Should any trees be removed this must take place in accordance with BS 5837:2012
- Invasive species vegetation will be removed by a qualified contractor prior to clearance and excavation works to prevent the transportation of invasive species to the Baldoyle SAC or SPA.

6.5.8 Control of Impacts on Archaeology and Heritage

There are no immediate archaeological or heritage concerns on the development site. This has been addressed in the EIAR for the development. The Site is a historical battle site.

Should any concerns arise during excavation in relation to the discovery of potential archaeological or cultural items or areas, a project archaeologist will be engaged to assess the excavation and determine if works should be suspended pending archaeological investigations.

7 SITE TIDINESS & HOUSEKEEPING

Contractors are required to meet current Good Manufacturing Practice (cGMP) standards. These standards ensure that products manufactured on-site are made in such a way that the CMT can guarantee they are safe, pure and effective. Accordingly, a high standard of housekeeping is expected on all areas of site, including those areas outside of manufacturing. 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.
- All contractors shall be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction.

The site will be left in a safe condition.

8 EMERGENCY PLANNING AND RESPONSE

8.1 Environmental Emergency

A PSCS will be appointed for the project and will 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 site may include;

- Discovery of a fire within the site boundary
- Uncontained spillage / leakage / loss of containment action
- 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 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 spillages 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 CMT. 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
- Noise & Vibration

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

- Index Number
- Title of Legislation
- Summary of Legislation
- 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.

TABLE 1 EMERGENCY CONTACTS

Emergency Service Contact Numbers	Contact
Ambulance	999 or 112
Fire Brigade	999 or 112
Fingal County Council Environment Section	(01) 890 500
EPA	Regional Inspectorate, Clonskeagh, Dublin - (01) 8842693
HSE - Dublin North Specialist Section	(01) 8976140
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 2591 Eastern Division Ecologist: (076) 100 2622 District Conservation Officer (Dublin, Louth & Meath): (076) 100 2634
Health and Safety Authority	1890 289 389
Connolly Hospital Blanchardstown, Mill Road, Blanchardstown, Dublin 15	(01) 646 5000

Blanchardstown Garda Station, Dublin 15	(01) 6667000
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