Ardee Point,
Newmarket,
Dublin 8

Preliminary Construction & Environmental Management Plan

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1 Introduction

1.1 General

This document presents an outline plan to inform the construction of the proposed development and ensure active control, management and monitoring of waste and environmental impacts associated with the proposed development during both the Construction and Operational Phases.

This plan will be developed by the chosen Works Contractor and implemented throughout the construction phase of the project to ensure:-

- That all site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- To ensure that all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the Waste Management Acts 1996, 2007 & 2011.
- To manage and control any environmental impacts (noise, vibration, dust, water) that construction work activities may have on neighbouring properties and on the local receiving environment.

In addition a draft Waste Management Plan for the Operational Phase of the development is included which will be developed to ensure that all occupants and users of the development are provided with sufficient facilities to store, segregate and recycle domestic waste.

This Preliminary Waste and Environmental Management Plan will demonstrate how it is proposed during the Construction Phase to comply with the following relevant legislation and relevant Best Practice Guidelines:-

- *Waste Management Acts 1996 to 2011*
- *Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)*
- *Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)*
- *Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006.*

It is proposed that during construction the Design Team for the project will monitor the Contractors Site Management Team to ensure that all aspects of the proposed CEMP are adhered to and in addition will provide specialist environmental monitoring, consultancy and auditing services as required to ensure that all potential environmental impacts on the local receiving environment and on local residential amenity are controlled at source and minimised to acceptable levels and that all wastes generated by site activities are minimised, segregated, re-used, recycled or correctly disposed of by licensed / permitted waste contractors.

Each section of the Construction and Environmental Management Plan presents the potential environmental impacts, proposed monitoring methodologies, limit values where applicable, based on the concept of Best Practice and the proposed mitigation measures to be implemental at the site. Reference to National and International Standards are also included where relevant.

2 Description of Proposed Development

2.1 General

It is proposed to develop the site which is bounded by Newmarket, Ardee Street, Brabazon Row and St Luke's Avenue. It has been derelict for a number of years with the majority of the site having been cleared of the of buildings a number of years ago. However, there are a number of structures remaining including a brickwork three storey tower structure, a partially collapsed brickwork structure and a number of Warehouse with asbestos roofs with one located over historic barrel vaults located below ground level.

It is proposed to clear the site with the exception of the three storey tower, brickwork barrel vaults and the masonry wall to Newmarket and to construct Student Accommodation & Co-Working Space on the site. It is not proposed to construct a basement but due to the height of the buildings the foundations will be ground beams and augered piles. Above ground, the structure will be constructed of reinforced concrete with precast concrete floor slabs. Brickwork is proposed to be used extensively in the facades.

2.2 Scope of Construction Management Plan

The range of works to which this Preliminary Construction & Environmental Management Plan will be integrated into during the design phase and construction phase of the site over an approximate 18 month period, are summarised as follows:-

- Demolition, clearing of the site and ground preparation works
- Site works including drainage and access points.
- Excavations on the site for ground beams, pilecaps and attenuation tanks.
- Installation of piles and construction of new buildings.
- Waste Management during the Construction Phase.

It is proposed that this Preliminary Construction & Environmental Management Plan will be developed by the Contractor at the beginning of the construction phase of the works and include a detailed Sequencing and Phasing Schedule and Traffic and Parking Management Plan for the works.

2.3 Access to the Works and Traffic Management

There are a number of accesses possible to the site of the works due to the site being bounded by streets. It is however not proposed to access the site from St Luke's Avenue as it is a busy roadway. Currently it is proposed to access the works from Newmarket due to the width of the street in front of the site and lack of impact that this will have on the street. Ardee Street is too narrow to access the works and only a hoarding line is proposed along this elevation. Brabazon Row has a greater width but is still relatively narrow compared to Newmarket.

Therefore, with the main access on Newmarket, it is proposed to locate access and egress to the site via this location with the marshalling of vehicles locally at this point to ensure safe access and egress from the site.

In relation to Traffic Management and Access, the following is proposed:-

- There will be no parking of vehicles or construction vehicles on the site during the works. Any staff vehicles will be parking in designated public parking places.
- Pedestrian routes past the site works will be maintained during the works and the site access on Newmarket will have a Marshall/Banksman.

A more detailed Construction Traffic Management Plan shall be provided by the Main Contractor specific to the site and contain developed details of the measures as noted above and in particular take into account access and egress from the site of the works, parking & existing road users.

2.4 Proposed Building Construction

It is proposed to construct Student Accommodation in three separate buildings of heights from five to eight stories. No basements are proposed but due to the height and ground conditions, the building will be supported on ground beams and CFA augered piles.

For the constructions of the buildings, it is proposed to use a reinforced concrete structure however floor slabs will be precast concrete with the exception of the first floor which will be a transfer structure which will be deeper than the other slabs and will be constructed using in-situ concrete.

Stability to the buildings will be provided by lift shafts and stair cores and these will be integrated into the building structures. Facades will be constructed using brickwork and cladding panels and will be constructed simultaneously with an inner leaf of blockwork.

Surface water drainage will be dealt with on-site using a series of measures to soak the water to ground via landscaping features and planting. All foul water will leave the site and be discharged to the public sewer under Brabazon Row.

3 Waste Management Plan – Construction Phase

Waste materials generated by earthworks, demolition and construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication - *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.*

The Waste Management Plan will specifically address the following points:-

- Analysis of waste arising / material surpluses
- Specific Waste Management objectives for the Project including the potential to reuse and process on-site demolished buildings for further use in the construction phase.
- Asbestos Removal
- Methods proposed for Prevention, Reuse and Recycling
- Waste Handling Procedures
- Waste Storage Procedures
- Waste Disposal Procedures
- Waste Auditing
- Record Keeping

3.1 Waste Minimisation

It is not proposed to generate much waste from soil excavations on the site – mainly due to lack of a basement structure – however some material will be generated from stripping the site of fill material on the top layer and also from ground beam excavations and pile risings from CFA augered piles.

It is not proposed to 'stockpile' any of this material on the site but to excavate directly into trucks and remove from the site.

Construction Waste minimisation and prevention shall be the primary responsibilities of the Purchasing Manager and the Project Manager for the Contractor during construction of the buildings and they shall ensure the following:-

- Materials will be ordered on a 'just in time' basis to prevent over supply and site congestion.
- Materials shall be correctly stored and handled to minimise the generation of damaged materials.
- Materials shall be ordered in appropriate sequence to minimise materials stored on site.
- Sub-contractors will be responsible for similarly managing their wastes.

In addition, as the useable area for construction is confined the contractor will need to carefully manage storage of materials on site.

3.2 Programme of Waste Management for Construction Works

The Project Manager for the Contractor will determine the best methods for waste minimisation, reduction, reuse, recycling and disposal as the construction phase progresses and waste materials are generated in accordance with procedures outlines in the waste management plans.

3.3 Construction Waste Disposal Management

It is proposed that from the outset of construction activities, a dedicated and secure compound containing bins and/or skips, into which all waste materials generated by construction site activities will be established at the site.

In order to ensure that construction staff correctly segregate waste materials, it will be the responsibility of the Site Construction Manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.

It will be the responsibility of the Project Manager or his/her delegate that a written record of all quantities and natures of wastes exported off-site are maintained in a Waste File at the Project office and that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads.

It is proposed that waste materials generated by the demolition of existing structures and the construction of new structures will be collected and stored in separate clearly labelled skips in a predefined waste storage area in the site compound and that these materials will be collected by a Permitted Waste Contractor holding an appropriate Waste Collection permit in compliance with *Waste Management (Collection Permit)Regulations 2007 (SI No. 820 of 2007) and Waste Management (Collection Permit)Amendment Regulations 2008 (SI No. 87 of 2008)* and that they will be sent for recycling and reuse to appropriately Permitted / Licensed Waste Facilities in compliance with *Waste Management (Facility Permit and Registration) Regulations S.I. No. 821 of 2007and the Waste Management (Facility Permit and Registration) Amendment Regulations S.I. No. 86 of 2008.*

Prior to the commencement of the Project, the Construction / Project Manager shall identify permitted Waste Contractor(s) who shall be employed to collect and dispose of all wastes arising from the project works. In addition, the Construction / Project Manager shall identify all waste licensed / permitted facilities that will accept all expected waste exported off-site and will maintain copies of all relevant Waste Permits / Licences as required.

3.4 On-Site Waste Reuse and Recycling Management

Due to the confined nature of the site (as building works are proposed on the full footprint), it will not be possible to reuse or process materials that arise from the demolition process on the site. The limited amount of material generated will be taken off site for processing and recycling.

3.5 Inert Wastes

As there are no basement proposed for the site and the foundation solution proposed is piling, the only waste materials that will be generated from the site excavation will be inert clays, some gravelly clays and compacted topsoil and some fill materials. Some demolition wastes will be generated which will not be inert – such as asbestos corrugated roof panels.

The waste material generated by construction works will be mixed Construction & Demolition (C&D) waste, comprising of concrete, tiles, ceramics, bricks and blocks. Material will be sorted and separated on site into different classifications for removal off site which is considered standard procedure.

All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

3.6 Hazardous Wastes

While it is not anticipated to encounter hazardous wastes on the site (apart from asbestos – see below), should any be encountered the following procedure should be followed. The management of all hazardous waste arising (such as but not limited to asbestos and lead) if they occur, shall be coordinated in liaison with Health and Safety Management.

3.7 Asbestos

It is expected to encounter hazardous wastes on the site in the form of Asbestos Corrugated Roof Panels, Prior to demolition of any of the structures on the site, an Asbestos Survey will be undertaken as required by current Regulations (Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010 to identify if any Asbestos Containing Material (ACM) is present. Following completion of the Asbestos Survey, the following procedures will be followed.

Site demolition works that include the handling of removal of hazardous materials such as asbestos (if identified) will only be conducted by specialist hazardous waste contractors that specialise in the handling of such material. All waste asbestos will be immediately removed off-site following the correct regulated procedures by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate disposal to an appropriately Permitted / Licensed Waste Facility.

3.8 Contaminated Soil

While it is not anticipated that there will be any contaminated soil on the site - as there have been no indications of any contamination was encountered during trial hole works or boreholes, should contamination be discovered in whatever form, the following principals will be followed:-

Where it is discovered that existing grounds including top and sub soils may be contaminated by fuel oil hydrocarbons, these areas of ground will be isolated, tested for contamination, and pending the results of laboratory testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licensed Waste Facility. It is the responsibility of the Project Manager or his/her delegate that a written record of all quantities and natures of wastes reused / recycled during the project are maintained in a Waste File at the Project office.

Prior to commencement on site, it is proposed to undertake a further detailed site investigation of the site. As part of this, soils will be tested on a grid system for potential contaminates and the soils across the site will be classified in cells in a Waste Classification Report. This results of this Report will be used to assess the locations where soil being excavated from the site can be directed to.

4 Environmental Management Plan

The Environmental Management Plan (EMP) will be implemented to ensure that potential impacts relating to noise nuisance and disturbance, dust deposition nuisance, surface water and vibrational impacts are effectively minimised, controlled and monitored to ensure that the site construction activities do not have an adverse or unacceptable impact on local receptors, adjacent property, adjacent users and human health or on the wider receiving environment.

4.1 Environmental Aspects & Impacts

The following section describes the environmental aspects and impacts that are relevant to the construction phase of the proposed development and form the basis of the proposed environmental management and monitoring programme.

Definitions of Environmental Aspects and Impacts:-

Environmental Aspect:	Element of an activity, products or service that can interact with the existing environment.
Environmental Impact:	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an activity, products or services.
Direct Impacts:	Those impacts associated directly with the environmental aspect (e.g. increased noise and dust levels).
Indirect Impacts:	Those impacts associated indirectly with the environmental aspect (e.g. 'disposal of waste' and 'fumes emitted during transportation to landfill contributing to the greenhouse effect' impact.
Normal Situations:	The project programme is progressing as planned.
Abnormal Situations:	The project programme is not progressing as planned because of unforeseen and unpredictable circumstances.
Emergency Situations:	An unplanned and unwanted situation or activity has occurred (e.g. fire, explosion, malicious damage).

4.2 General Site Works – Construction Phase

4.2.1 Construction Phase Operating Hours

The proposed operating hours for the project are proposed to be as follows:-

07:00hrs – 18:00hrs Monday to Friday
07:00hrs – 14:00hrs Saturdays
Site closed on Sundays / Public Holidays

Compliance with these strict noise controls will be verified by the programme of construction and demolition phase noise monitoring proposed in this CEMP.

4.2.2 Temporary Works/Tree Protection Measures

There are no existing trees on the site that are required to be protected as part of the works.

4.2.3 Demolition of Structures on the Site

There are a number of structures to be demolished on the site. They include a partially demolished brick building and a number of Warehouse buildings that are covered with asbestos roofs. As they are freestanding and generally single storey, it is a straightforward operation to demolish them. The sequence for demolition of the asbestos roofs and the removal from site of this material is covered elsewhere in this Plan.

The brickwork contained in the historic structure is to be inspected to see if it can be salvaged however this depends on the mortar and whether the mortar is friable and will fall off the brickwork easily without the need to mechanically remove the mortar (as this would make it uneconomical and also damage the brick).

One of the Warehouse buildings has been constructed above a set of brickwork vaults. The warehouse steel structure is relatively modern and is laid on a concrete base so careful removal is required so as not to damage the vault structure underneath.

It is proposed that all materials generated in the demolition process will be segregated and taken from site to be processed further for recycling.

4.2.4 Excavations on the Site

As there is no basement proposed, excavations will be limited to site clearance, excavations for pilecaps and groundbeams and drainage for the site. There will however be spoil generated from pile risings as it is proposed to use a CFA Augered pile technique so as to minimise vibration induced on the site due to the close proximity of historic structures to be retained.

Pilecaps will be limited to in depth to 800mm while the majority of drainage runs will also be limited to this depth. However, the proposed attenuation and rainwater harvesting tanks will entail localised excavations deeper than this to accommodate the tanks. The geotechnical investigations to date have indicated that there are soft soils overlying gravels and then boulder clays below this. No bedrock is expected to be encountered in any excavations.

4.2.5 Construction of Superstructure of Buildings

It is proposed to construct the building using a mixture of types of constructions:-

- Cast in-situ concrete elements – ground beams structure, staircores and liftshafts
- Precast concrete slabs – floor slabs & stairs
- Blockwork – internal walls and walls between units
- Glazing and brickwork – facades to buildings.
- Cladding – facades and roof level cladding.

Using these forms of construction – as some of the elements are prefabricated off site – will help reduce the construction time of the project.

4.2.6 Provision for loading and unloading materials

The loading and unloading of materials at the site has the potential to generate elevated levels of noise and dust as a result of vehicle movements (trucks, vans, mobile cranes) throughout the working day at the site. It is proposed that dedicated delivery area shall be clearly identified at the site. Any material stockpiles shall be located as close as possible to the location where they are to be used so as to minimise associated vehicle activities and therefore minimise the potential for noise and dust nuisance on the site. Contractors delivering fine aggregate materials in open top delivery trucks to the site shall be instructed to use a suitable cover so

as to minimise the potential for wind to generate airborne dusts on transit to the site and to minimise the impacts on local air quality on the greater environment over the transport route from source to delivery point. Drivers delivering materials to the site shall be instructed by site management to turn off idling vehicle engines when the vehicles are on site for extended periods.

Dedicated delivery areas will provide for the orderly management of delivery vehicles and the containment of spilled materials shall they arise, the concentration of specific site activities in a dedicated area away from the closest receptors and the ability to better manage and control potential noise and dust impacts.

4.2.7 Storage of plant, materials and operatives vehicles

It is proposed that all plant, materials and operatives vehicles shall be stored in dedicated compound areas within the site in order to minimise the interaction that each element may have on the other. That is, the separation of operative vehicles from aggregate material stockpiles will minimise the potential for vehicle movements to generate dust. All plant shall be stored in a dedicated area following the cessation of site activities at the end of each working day or during periods when the plant is not being utilised. It is recommended that a specific area on site shall be delineated.

Site vehicles and mobile plant (e.g. Generators) have the potential to contaminate soil and groundwater by leaking oil or fuel. The storage of these items of plant in a suitable dedicated area on mobile bunded units and drip trays will serve to minimise the potential for contamination as any leaks, oil spills or stains on the ground will be more readily identifiable and will better ensure that an immediate or more timely response.

The Site Manager shall conduct a daily visual inspection of the site to identify any signs of ground contamination from plant storage areas and that where a spill is identified, the source shall be identified and the appropriate repair / maintenance be conducted. All daily visual inspections shall be recorded by the site manager or his/her delegate on a “Daily Site Inspection Sheet”. All fuels, oils and liquid materials shall be stored in a dedicated bunded area or within a dedicated impermeable storage unit to minimise the potential for soil and groundwater contamination. Storage units containing all fuels oils and liquid material must be locked and secured overnight so as to prevent against pilferage and vandalism.

A policy of “zero tolerance” shall be applied at the site in relation to the dumping of empty or partially empty oil, lubricant, fuel, or any other non solid material in the vicinity of the site. All empty containers must be stored in a dedicated area designed to prevent the contamination of soil and groundwater as a result of leaking drums or containers prior to the proper disposal off site to a suitably licensed waste disposal facility.

4.3 Dust Management Programme

Construction site activities have the potential to generate fugitive emissions of dust levels as a result of vehicle movement on unsealed site surfaces, windblown dusts from aggregate / fine material stockpiles, angle grinding of concrete and stone, crushing activities if required and the movement and deposition of aggregates, soils / clay and other materials at the site.

4.3.1 Proposed Dust Monitoring Programme

Dust deposition levels will be routinely monitored in order to assess the impact that site activities may have on the local ambient air quality and to demonstrate that the environmental control measures in place at the site are effective in minimising the impact of construction site activities on the local receiving environment.

4.3.2 Dust Management and Suppression / Abatement Techniques

It shall be the responsibility of the site manager to ensure that dust emissions generated by site activities are controlled and minimised and as such will implement appropriate dust suppression techniques as appropriate. Appropriate techniques will include water spraying of stockpiles and haul roads and temporarily curtailing

specific operations when unfavourable weather conditions are prevailing (e.g. during dry, windy weather when the prevailing winds may cause dust to be blown towards local receptors).

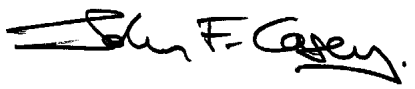
A road sweeper vehicle shall be used to clean soiled roads in the vicinity of the site when required. This will also ensure that the potential for elevated concentrations of particulate matter entering any surface water drain will be minimised.

The Site Manager shall maintain a complaints log and in the event of a complaint relating to dust nuisance, an investigation shall be initiated.

5 Liaison with Local Community & Traders

It is recognized that there will be concerns among the local Community & Traders about the impacts of construction. In addition, to developing this Preliminary Plan and setting out clear and thorough procedures for the management of the project the Contractor will be required to:

- Appoint a Community Liaison Officer as a single point of contact to engage with the community and respond to concerns.
- Ensure specific construction tasks such as large concrete pours and material deliveries are pre-planned and scheduled to minimize disruption where possible.
- Keep local residents informed of progress and the timing of particular construction activities that may impact on them



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