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CONSULTING ENGINEERS

RESIDENTIAL DEVELOPMENT AT GLYNTOWN, GLANMIRE, CORK CITY

CONSTRUCTION & ENVIRONMENTAL MANAGEMENT PLAN

DATE 04/09/2024

REVISION 4

JOB NO. 6291

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Contents

1 Introduction

Denis O'Sullivan & Associates were engaged as Consulting Engineers for the proposed development at Glyntown, Glanmire, Cork City.

This document comprises the Construction & Environmental Waste Management Plan and in particular provides details of the intended construction practice for the development including construction access and phasing, the proposed hours of working, noise management measures and off-site disposal of construction waste. The proposed sustainable management of wastes arising during the construction phase are also provided demonstrating how environmental impacts are minimised during the construction phase of the development.

Finally, the site compound location, construction traffic routes and parking proposals of workers along with general site considerations are also outlined.

2 Existing Situation

The site is accessed from the East Cliff Road in Glyntown, Glanmire. The site is located on the outskirts of Cork City and is in close proximity to the town of Glanmire and Riverstick. The Northern and Western boundary slopes down to the Glashaboy River and is defined by existing woodland and hedgerows. The southern boundary is shared with an existing dwelling and consists of evergreen trees. The Eastern and Southern boundary along the East Cliff Road is an old stone wall.

Figure 2.1 –Site Location

3 Proposed Development

This application consists of

- The construction of residential development of 80 no dwelling units consisting of 1 to 3 bed apartments over 7 no. blocks of apartments.
- The conversion of an existing coach house building.
- Ancillary site works including a vehicular entrance and a pedestrian entrance from the East Cliff Road
- Associated secure bicycle parking and bin storage.
- Vehicular access to the proposed development will be via the existing access from the L-2998 public road although it is proposed to alter the entrance in order for it to be perpendicular to the public road.
- The development will also propose to include a pedestrian amenity walkway around the south west and western boundary of the site.

4 Potential Impact of Construction Works

The construction phase of the development will generate a certain amount of activity on the site. The general activities on site are likely to generate air and noise emissions and traffic movements. Alongside these general activities there will also be an amount of construction waste generated. The excavation of foundations and trenches for ductwork and sewers may require the removal of some rock underlying the site. The contractor will select the method of rock removal; however, it is likely the volume of rock to be removed will be minimal and localised, and should not require a rock-breaker. The amount of cut and fill has been balanced as far as practicable so the vast majority of excavated material shall be re-used on site and therefore minimise movements of earthworks vehicles out of the site.

4.1 General Construction Activities

When considering a development of this nature, the potential noise & traffic impact on the surroundings must be considered for the construction phase. The construction phase will involve the preparation of the site, excavation of on-site material, construction of site roads and building of the proposed dwellings. With the construction activity there will be an increased number of vehicular movements in the locality, both construction and worker vehicles. The construction at the site will also have the potential of raising dust into the air and depositing or spilling material on adjoining roads during the construction works. Noise will also be emitted from the construction site during the course of the works, with limits on the hours of operation the norm to keep noise impacts to a minimum (see section 9.2 below). The flow of vehicular traffic to and from a construction site is also a potential source of relatively high noise levels.

The potential for vibration at neighbouring sensitive locations during construction is typically limited to excavation works and lorry movements on uneven road surfaces, see section 9.3 below.

The construction area is separated from existing dwellings by a site boundary. There is potential for some noise and dust impacts on the closest buildings to the east of the site boundary, with the

most significant constraint centring on vehicular access and egress from the site and the impact on the public roads.

The likely effects include noise and air blown dust being emitted from the site. The measures outlined in general for the site will seek to mitigate and/or remove impacts on the existing residents and the public road and these mitigation measures are detailed in the subsequent sections.

4.2 Developer Liaison

An information notice board will be erected at the construction site entrance. This notice board will be listed with a designated contact number to assist residents in contacting the developer with any queries.

5 Construction Works & Sequencing

Construction activities will undoubtedly have impacts and associated mitigation measures will be required to address any proposed works.

5.1 Phasing

It is anticipated that the works will be carried out in a single phase.

5.2 Construction Site Access

Access to the works shall be from the existing site entrance.

5.3 Perimeter Fencing

The first task in the construction phase will be to erect a stock-proof fence along the perimeter boundary of the development. This will restrict public access to the work area.

5.4 Demolition

There is an existing retaining wall on-site which will need to be removed at the same stage as the stripping and earthworks phase. It is the Contractor's responsibility to provide a survey and detailed method statement for demolition before the commencement on site. If the demolition involves temporary works design, the design and method statement must also be submitted to the PSDP in advance. The method statement shall include but not be limited to the following:

1. The sequence of demolition.
2. The plant and equipment used.
3. Mitigation and monitoring of noise, dust and vibration.
4. The handling of debris.
5. Precaution measures.

5.5 Stripping & Earthworks

In parallel with access road construction the main earthmoving works will be undertaken on the site. As the plant required for this phase will remain on site and not leave until the work is complete and the materials input is minimal, it is considered that the site access outlined in Section 5.2 above will be adequate to cater for the construction works.

Level platforms will be excavated for each residential building and there will be a requirement to import stone material for the access roads and to the front of each dwelling. Measures will be in place to contain dust and/or to ensure that mud and other debris are kept off the public roadways.

5.5.1 Earthworks Impact

The existing site has an even slope and therefore there will be no significant earthworks required with the exception of stripping the topsoil from the site. The main areas of potential impact with respect to earthworks are as follows: -

- Excessive Dust deposition
- Silting up of the watercourse
- Debris on Public Road

5.5.2 Earthworks Mitigation

The proposed mitigation measures for both the construction and operational phases include:

- Cattle (Rumble) grids will be placed at vehicular exit gates during excavation to remove spoil from truck wheels leaving from site.
- A street sweeper will attend site regularly to clean the road when there are truck movements in and out of the site.
- Hard surface roads will be regularly swept to remove mud and aggregate materials from their surface;
- Public roads outside the site will be regularly inspected for cleanliness, and cleaned as necessary;
- Material handling systems and Site stockpiling of materials will be designed and laid out to minimise exposure to wind; and
- Water misting or sprays will be used on stockpiles as required if particularly dusty activities are necessary during dry or windy periods.
- A silt fence in compliance with CIRIA C532 shall be used as a mitigation measure to prevent silting up of the adjoining water course. The silt fence shall be erected along the northern boundary to control water pollution from the construction site to the Glashaboy River .

5.6 Site Establishment

- On commencement of works on site a site compound will be established over the proposed green area. In this area the following facilities/provisions will be made:
- Site offices, canteen and toilet / changing facilities c/w temporary water supplies and wastewater disposal to the existing foul sewer on the adjoining Cliff Road.
- Secure compound and containers for storage of materials and plant.
- Temporary vehicle parking areas.
- Contained area for machinery refuelling and construction chemical storage.
- Contained area for washing out of concrete and mortar trucks.
- A security/Herras fencing will be provided at the main site entrance. All vehicles and personnel will be checked on entry to ensure no unauthorised access or fly-tipping. Heras fencing will also be provided around all boundaries as required.
- Water supply for the construction facilities will be taken from the mains supply which is adjacent the site on East Cliff Road.
- Power for the pumps and small power requirements for construction activities will be supplied from diesel generators until such time as the permanent site power supply is available.

5.7 Landscaping

Any trees shown on planning drawings to be retained will be protected for the duration of the construction activities on site and in accordance with BS 5837. Protective measures will include a protection fence erected beyond the branch spread of the trees and no construction activities will take place within the protective barrier save for perimeter fencing along the site boundaries. Tree felling and clearing of vegetation shall take place out of bird nesting season.

5.8 Site Infrastructure

Proposed site infrastructure will be completed in a coordinated approach in line with the delivery of the residential units. It is anticipated that works will be staged in a similar nature. A more detailed discussion on site infrastructure is contained further in this chapter.

5.9 Residential Unit Construction

Once the site development and infrastructure are sufficiently advanced, construction of individual residential units will commence. It is envisaged that this will commence with the proposed units at the rear of the site working outwards.

The basic sequence of residential construction is well established and the basic steps are as follows:

5.9.1 Substructure

Construction of foundations and rising walls. This might involve a degree of piling and excavation and all excavated material will be disposed of site in a licenced waste management facility. Concrete and blocks will be delivered over a number of days. At this stage hard-core will be placed over the footprint of the units and roadways, which will generate a significant amount of truck movements into the site. The substructure will include allowances for under slab services/ utilities serving the units.

5.9.2 Concrete Floor Slab

Pouring of concrete floor slab over the internal footprint of the apartment blocks and duplex units. This is generally completed in a single pour involving a number of concrete trucks delivering in one day.

5.9.3 External & Internal Walls

Construction of external and internal blockwork walls of 100/215mm solid blockwork will commence. Blocks, mortar, etc. will be delivered on standard trucks over a continued period as the work progresses.

5.9.4 Floor Installation & Prefabricated Roof Truss Installation

Construction of floor and Roof erection will commence. Concrete precast floors, prefabricated floor joists & roof trusses will be delivered on standard trucks over a continued period as the work progresses.

5.9.5 Window & Installation

Sealing of the building will continue with the installation of windows and doors. Again, these will be manufactured off site and deliver for installation.

5.9.6 Plastering (Internal & External)

Plastering of both the internal and external walls will involve the delivery of material supplies on an on-going basis.

5.9.7 Second Fix Carpentry, Mechanical & Electrical Services

Installation of lighting, alarm system, power outlets, etc. This is undertaken once the building is weathered and does not involve the delivery of bulk materials.

5.9.8 Site Finishes

Tie-ins to main site services, road surfacing, and general landscaping will be carried out with no need for bulk materials. The delivery of construction materials and its impact on traffic volumes will be dealt with in a construction stage Traffic Management Plan.

6 Infrastructural Works

The site development works will comprise new roads, footpaths, surface and foul water drainage, watermains and installation of service ducts for various utilities such as electricity, gas and telecommunications services. Each of these services are dealt with individually in the following sections.

6.1 Surface Water Drainage

The storm water system will involve a network of underground pipelines and manholes discharging to a public storm sewer on the main road via the new attenuation system, which will be fitted with flow control devices to ensure no increase in peak flows and an oil interceptor and silt trap to remove any traces of oil and silt washed off road surfaces.

The services layout drawings included at planning stage show the proposed surface water drainage layout for the entire site.

6.1.1 Impact

The main areas of potential impact with respect to storm water runoff are as follows: -

- Discharge of hydrocarbons can be a source of contamination of watercourses/groundwater.
- Siting of drainage services within the development to avoid future undermining/subsidence of building structures.
- Local flooding caused by overloading of the drainage system.
- Potential settlement of services through filled areas of the site.
- Back flows through surface water outfalls during extreme flood events.
- Silting of the water course

6.1.2 Mitigation

The proposed mitigation measures for both the construction and operational phases include:

- A silt fence in compliance with CIRIA C532 shall be used as a mitigation measure to prevent silting up of the adjoining water course. The silt fence shall be erected along the northern boundary to control water pollution from the construction site to the Glashaboy River .
- A Site Environment Plan (SEP) identifying fuel storage and refuelling locations will be developed and this plan will also identify the spill kit locations. Spill response kits will be required for each

piece of heavy equipment (i.e. Excavators, Loaders, Trucks) which will be at least 21 litre drum size each with spill pads, sorbent, small boom, plastic garbage bag and gloves.

- Silt traps will be installed on surface water drains during the site development works.
- Constructing buildings and roads above the flood level to ensure that back flows through the surface water outfalls will not occur.
- All foul and other waste water will be discharged to the foul drainage system.
- The storm drainage system with associated hydrocarbon interceptors and silt collection will be cleaned and maintained on an on-going basis throughout its lifetime in a manner and frequency that is in line with guidelines and ensures water-quality protection during/after the cleaning/maintenance processes.

The following measures will be implemented for the storage and use of hydrocarbons on site:

- Diesel tanks, used to store fuel for the various items of machinery, will be self-contained and double-walled.
- Refuelling will be carried out from these tanks or from delivery vehicles and will not be left unattended.
- Fuels, lubricants and hydraulic fluids for equipment used on the construction site will be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment according to best codes of practice - (Enterprise Ireland BPGCS005).
- Any spillage of fuels, lubricants or hydraulic oils will be immediately contained and the contaminated soil removed from the site and properly disposed of.
- Waste oils and hydraulic fluids will be collected in leak-proof containers and removed from the site for disposal or re-cycling.
- The development's road network will be finished with tarmac or asphalt surface which will discharge runoff to a piped drainage system.
- Proven engineering practice will apply during the hydraulic design process.
- Surface water drains will be installed in roads and streets adjacent to building structures.
- Spillage and leaks of oil from cars parked in the development during the operational phase is unavoidable. To reduce the potential impacts, oil interceptors will be incorporated into the site drainage design.
- The area is serviced by mains gas and this utility will be provided to the new development. The use of home heating oil is therefore eliminated so the risk has been removed.

The proposed development is not anticipated to cause an adverse impact on the surface water regime given the remedial and reductive measures previously outlined. Normal proven construction reinstatement and backfilling procedures will follow pipe laying, jointing, and testing procedures.

6.2 Foul Sewer Drainage

The proposed foul water drainage system is illustrated in the services drawings and will discharge to the public system located on the public road with a gravity outfall. All works will be in accordance with Irish Water Specifications and details.

6.2.1 Impact

The potential impacts of the proposed development in terms of foul sewer are: -

- Impacts on surface water drains and watercourses in the event of leaks from the foul water drainage system.
- Impact on groundwater and soils in the event of leaks from the foul water drainage system.
- Overloading of foul water drainage infrastructure causing damage and blockages.
- Potential damage to local authority wastewater treatment plant and utilities.
- Siting of foul drains to avoid future undermining/subsidence of building structure.

6.2.2 Mitigation

The proposed mitigation measures are:

- Proven engineering practice shall apply during the hydraulic design process of the foul sewer network.
- Foul sewers will be installed in accordance with I.S. EN 752: Drains and Sewer Systems outside buildings.
- The ability of the ground to support the proposed drainage network will be confirmed by preliminary site investigation works.
- The foul sewer network will be vented in accordance with standard working practice.
- Foul water drains will be installed in roads and streets.

6.3 Potable Water

It is proposed to provide a new 100mm O.D. Ø (outside diameter) HDPE connection to the public watermain with associated hydrants, valves and metering requirements.

Water distribution supply to each building will be sized to cater for the requirements of those particular uses. Metered connections will be made to the trunk supply main.

6.3.1 Impact

The main areas of potential impact with respect to water supply are as follows: -

- New developments can cause difficulties for existing water supply.
- Reduction of existing storage capacity.
- Reduction of pressure in existing water supply.
- Siting of watermains to avoid future undermining/subsidence of building structures and permit ease of maintenance.

6.3.2 Mitigation

The proposed mitigation measures are: -

- The existing water supply feeds will be protected at all times during construction.
- Watermains will be installed in roads and streets.
- The existing water supply will have adequate capacity to meet the projected water demand of the development. No adverse impact is foreseen on existing water supply or pressure.

Firefighting provision will have no extra significance over and above any similar development of this kind.

6.4 Electrical Systems

Power and communications cabling will generally be run underground in a system of ducts and draw pits. Power supply will be taken from the existing estate for distribution through the site.

The exact details of the above systems will be illustrated on the drawings accompanying any precedent condition response in the event of a planning permission being granted.

The basic infrastructure will be constructed at an early stage and the branch lines will be extended to various areas of the site as construction progresses. The installation of these services involves extensive trenching and the generation of surplus excavated material. The volume of this material has been calculated and it will be used within the site for re-grading around the site as development progresses. The impact of such works will be disturbance to users of the existing supply. The client will seek to minimise any disturbance to existing users by complying with the supplier utilities specifications/conditions and details.

7 Health & Safety

7.1 General

As required by the Safety Health and Welfare at Work (Construction) Regulations 2013, a Project Supervisor Design Process (PSDP) will be appointed by the developer to co-ordinate the design effort and to address and minimise construction risks during the design period. Notification of this appointment will be sent to the HSA by means of their Approved Form 1 (AF1). As design advances, a Preliminary Health and Safety Plan will be drawn up by the PSDP.

This will be passed on to the appointed Project Supervisor Construction Stage (PSCS) to be developed into a full project Health and Safety Plan. Notification of this appointment and the commencement date of construction will sent be to the HSA by means of their Approved Form 2 (AF2).

The construction areas will be delineated and will be under the control of the PSCS who will co-ordinate and supervise all safety aspects of the project. A Safety File will be compiled and maintained on site for the duration of the project and this and the implementation of the Plan will be subject to regular audits. All personnel and their subcontractors who will be working on or attending site will attend and comply with a Site Safety Induction Course to be provided by the Site Safety Officer. Construction workers carrying out safety critical tasks must complete Construction Skills Certification Scheme (CSCS) training, and general operatives will be required to have a valid and current Safepass card.

All Contractors shall be requested to provide a sound working environment for all employees involved in the design, construction and operation of the PV Plant. This shall take into account all applicable national laws, guidelines and standards.

The Contractors must ensure that the following HSE objectives are met:

- Zero accidents and injuries with respect to all involved workers.

- Zero harm to workers, the public and the environment.

Each Contractor shall prepare and implement the Health, Safety and Environmental (HSE) Plan and associated working instructions and procedures that will govern their actions at all times. The HSE Plan will cover the following aspects:

- Project Policy Statement.
- Roles and Responsibilities.
- Site regulation, including, for example, housekeeping, barricades, excavations, tools and equipment, electrical work, ladders and scaffolds, etc.
- Risk Management and Hazard Identification.
- HSE training.
- HSE management of subcontractors.
- Work Permit system.
- Personnel Protective Equipment (PPE).
- Inspection and auditing
- HSE meetings.
- Incident Investigation and Reporting
- Site security
- Medical care and first aid

Furthermore, the Contractors shall develop and implement an emergency response plan outlining all necessary measures and communication procedures in case of emergency situations. The preparation and application of the HSE shall be audited independently throughout the construction period.

7.2 Control Substances Hazardous to Health

The strategy for controlling all substances coming onto site and all work activities and progress which may generate hazardous substances will be managed and controlled in accordance with best practice guidance. Some control measures to be employed are as follows:

- All fuels and chemicals will be stored in designated areas, with deliveries of all hazardous materials supervised;
- Storage tank or container facilities will be appropriately bunded with designated areas as far as possible from any watercourses or surface drains;
- In case of spills or discharges, remedial action will be taken as soon as possible, and set procedures will be compiled with;
- A logistics plan will be developed to take into account the management and control of hazardous substances on site; and
- Personal protective equipment (PPE) suitable to prevailing conditions will be used by all construction workers.

7.3 Emergency, Fire and Accident Procedures

Emergency routes and procedures will be continuously adapted to suit the construction sequence and stage of the Development. An Emergency Fire and Accident plan will be prepared, generally

following the guidelines for plan contents below and updated on a regular basis to take account of construction progress:

- Definition of the management organisation and responsibility for safety;
- Definition of appropriate fire prevention measures, including good housekeeping of site, welfare facilities and offices;
- Use of non-flammable/fire retardant materials for protection of finished works;
- Safe use and safe storage of flammable materials of all categories, whether solid, liquid or gas;
- Appropriate waste management procedures;
- Monitoring the type and frequency of fire inspection/audits;
- Suitable site accommodation location, construction and detection/firefighting systems;
- Development of evacuation plans, to include setting of systems in place to ensure that emergency vehicles have been called and all personnel have safely left the area;
- Training and fire drills.

8 Air Quality

Construction works will be carried out in such a way as to limit the emissions to air of pollutants (particularly dust and fine particles (PM10)), employing Best Practicable Means. The site will be managed in accordance with the CWMP to minimise the potential effects on air quality from construction. Monitoring will be undertaken throughout the construction period to enable proactive management of dust and PM10 levels. Wind speed and direction will be included in the monitoring.

8.1 Effective material storage and handling

The storage and handling of construction materials can be a significant dust emission source. The adoption of appropriate dust control measures will greatly reduce dust emissions from these sources and ensure that any adverse effects are reduced or eliminated.

Handling and storage areas will be sited as far away as is reasonably and practically possible from public/residential areas. Handling and storage areas will be actively managed and fine, dry material will be stored inside enclosed shield/coverings or within a central storage area. Any storage areas that are not enclosed will be covered/sheeted. Prolonged storage of debris on site will be avoided. Vehicles carrying dusty materials into or out of the site shall be sheeted down to prevent any escape of materials.

8.2 Construction Plant

Construction plant can be a significant source of emissions although control measures can be implemented to minimise any adverse impacts. The following measures will be employed:

- Site plant and equipment will be kept in good repair and maintained in accordance with the manufacturer's specifications. Allowing for economic constraints, the plant will be selected on the basis of which has the least potential for dust and other emissions;
- Plant will not be left running when not in use (i.e. no idling);
- Plant with dust arrestment equipment will be used where practical;

- Where practical, cleaner fuels will be employed for construction plant; and
- Enclosures will be erected around major construction plant items as appropriate and where practical.

8.3 Vehicle Movements

Vehicle movements may result in dust emissions (by re-suspending dust from the road or from spilling dusty loads) and exhaust emissions. However, a number of control measures can be adopted to eliminate or minimise such emissions:

- Wheel washing facilities close to the site entrance to prevent mud from construction operations being transported on to adjacent public roads;
- Any spillages from vehicles leaving the site will be promptly removed;
- Damping down of site haul roads by water bowser during prolonged dry periods;
- Regular cleaning of hard-surfaced site entrance roads;
- Ensuring that dusty materials are transported appropriately (e.g. sheeting of vehicles carrying spoil and other dusty materials);
- Confinement of vehicles to designated haul routes within the site;
- Restricting vehicle speeds on haul roads and other unsurfaced areas on the site;
- All vehicles will be maintained to minimise exhaust emissions;
- Hoarding and gates to prevent dust breakout; and
- Appropriate dust site monitoring will be included within the site management practices to inform site management of the success of dust control measures used.

8.4 Dust

Dust control will be best achieved at sources, and if possible, activities will be carried out in a manner so as to preclude dust generation. Dust levels will be controlled and the development operated in a way which is not detrimental to the amenity of local residents. If dust is generated, steps will initially be taken to protect workers in the vicinity who shall, as a minimum, be issued with dust masks. Dust will, if possible, be contained in the location in which it is generated, and be controlled and managed therein. Dust suppression measures will be carried out to ensure that dust nuisance affecting neighbouring properties is minimised and the following control measures and good management practices, will be employed:

- Site operations will be planned to take into account local topography, prevailing wind patterns and local sensitive receptors e.g. schools, residences and ecological designated sites;
- Burning of materials on site will be prohibited;
- Loading and unloading will only be permitted in designated hard standing areas;
- Provision of water sprays and wind/dust fences where possible, particularly in dust sensitive locations;
- Stockpiles of soil, arising or other granular material will be sheeted, covered and/or treated to prevent dust raising that may cause risk to health or nuisance to the public;
- Hoarding will be erected around construction activities to minimise dust blow from site;
- An appointed person will oversee/control activities and handle complaints;

9 Noise Management

Noise and vibration levels will be controlled as set out below to ensure that the Development is operated in a way that minimises detrimental impact to the amenities of local residents.

9.1 Construction Noise

Infrastructure works, excavations, and foundation construction will be among the most significant activities. Although concreting operations will also give rise to noise, the levels generated would not be considered to be significant.

In order to minimise the noise impact further on the adjoining properties it is proposed that heavy equipment and machinery including pneumatic drills, construction vehicles and generators only work between the hours shown below. In addition, no deliveries and/or removal of materials will occur outside of these hours. All plant and equipment will be maintained in good working order in accordance with BS.5228 in order to minimise air and noise emissions.

Normal working hours are outlined below, however these will be subject to agreement with Cork City Council prior to commencement.

9.1.1 Normal Working Hours:

Monday to Friday: 08:00 to 18:00hrs

Saturdays: 08:00 to 16:00hrs

On occasions it may prove necessary to carry out noisy activities outside of normal working hours. In such instances prior consultation will be carried out with Cork City Council and local residents outlining the nature and reason for the works and their likely duration.

During construction, the measures summarised below, are to be employed:

- Details of construction activities, prediction levels/assessments will be discussed with the relevant authority, both prior to construction and during construction. Detailed construction programmes will be available in advance of work starting on site;
- Where work outside of agreed hours or likely to exceed specified noise limits is necessary then this shall only proceed subject to notification to Cork City Council Environmental Health Officer and local residents, and approval given.
- Except for emergency situations, notification will be in advance of any requirement for out of hours/noisy working.
- Where the potential for noise exists, 'Best Practicable Means' will be used to reduce noise to achieve compliance consistent with the recommendations of BS 5228, and may include:
- Careful selection of plant items, construction methods, programming, and implementing a 'noise and vibration protocol', which outlines monitoring frequency and action levels etc;
- Design and use of site hoarding and screens/noise barriers, to provide acoustic screening at the earliest opportunity;
- Vehicles and machinery will not be left running when not in use (i.e. no idling);
- Choice of routes and programming for the transport of construction materials.

9.1.2 Noise Limits

Noise Limits to be applied for the duration of construction works are as set out in the National Roads Authority (NRA) Guidelines for Treatment of Noise and Vibration in National Roads Schemes (summarised below in Figure 10.1.2) and BS 5228-1:2009+A1:2014 (Code of Practice for Noise Control on Construction and Open Sites).

Table 9-1 - NRA Guidelines for Maximum Permissible Noise Levels at the Façade of Dwellings during Construction

Days & Times	$L_{Aeq\ (1hr)}$ dB	$L_{pA(max)slow}$ dB
Monday to Friday 07:00 to 19:00hrs	70	80[2]
Monday to Friday 19:00 to 22:00hrs	60[2]	65[2]
Saturday 08:00 to 16:30hrs	65	75
Sundays and Bank Holidays 08:00 to 16:30hrs	60[2]	65[2]

Noise during site clearance and construction shall not exceed 65 db (a), Leq 30 minutes and the peak noise shall not exceed 75 dB(A), when measured at any point off site.

BS 5228 applies a noise limit of 70 dBA between 07:00 am and 19:00 pm outside the nearest window of the occupied room closest to the site boundary in suburban areas away from main road traffic and industrial noise. For the duration of construction works, a daytime noise limit (07:00 am to 19:00 pm) of 70 dBA shall apply (in accordance with the requirements of BS 5228 and generally in agreement with the NRA guidelines).

9.2 Vibration

Monitoring devices will be placed on all boundaries proximate to the construction site and along routes for construction traffic.

Vibration Limits to be applied for the duration of construction works are as set out in BS 5228-2:2009+A1:2014 (Code of Practice for Vibration Control on Construction and Open Sites) and BS 7385: 1993 (Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration). Allowable vibration during the construction phase is summarised below in Figure 10.2. These will be checked at a minimum of twice a week.

Table 9-2 - NRA Guidelines for Allowable Vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration

Allowable vibration velocity (Peak Particle Velocity) at the closest part of any sensitive property to the source of vibration, at a frequency of		
Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

10 Environmental Risk Assessment & Management Plan

The potential risks are typically assessed under a number of headings, including but not limited to:

- Noise – proximity of neighbouring residences
- Nuisance caused by dust emissions
- Impact of traffic - deliveries and removal of material
- Impact of traffic – road safety and cleanliness
- Hazardous Materials –storage
- Containment – spillage from oil tanks
- Containment – potentially turbid surface water
- Containment – concrete truck washings
- Disposal of foul water from compound
- Disposal of demolition waste and surplus materials

The risks are be discussed on site during construction as if unmitigated and then with proposed mitigation measures in place. The nature of these risks will change as the project progresses. For instance, in the earthworks phase the principal concerns would be noise, dust/mud and turbid surface water runoff, whereas in later phases issues such as traffic control and waste management would be seen as critical.

10.1 Risk Matrix

The above section outlines the type of risks associated with the project at this stage of development. These can then be tabulated to give a qualitative assessment of these risks, based on the potential consequences and likelihood of occurrence. The matrix identified in Table 11.1 can be used as a basis to classify the risk. The objective is that following implementation of the appropriate mitigation measures all identified risks are in the Low-Intermediate range, and are therefore considered acceptable.

Table 11.1 – Risk Matrix

Likelihood	**H**	**Low-Med (Intermediate)**	**Medium (Unacceptable)**	**High (Unacceptable)**	**Emergency (Unacceptable)**
	M	**Low**	**Low-Med (Intermediate)**	**Medium (Unacceptable)**	**High (Unacceptable)**
	L	**Low**	**Low**	**Low-Med (Intermediate)**	**Medium (Unacceptable)**
	LL	**Low**	**Low**	**Low**	**Low-Med (Intermediate)**
		LL	**L**	**M**	**H**
		Consequence			

11 Traffic management

11.1 Construction Manager

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

- Overall responsibility for the development and implementation of the CTMP;
- Allocating resources to ensure the implementation of the CTMP;
- Participates in the management review of the CTMP for suitability, adequateness and effectiveness; and
- Sets the focus of construction and traffic management policy, objectives and targets for the Contractor.

11.2 Site Supervisors

Construction Site Supervisors are required to:

- Read, understand and implement the CTMP;
- Know the broad requirements of the relevant law in environmental matters and take whatever action is necessary to achieve compliance. Where necessary seek the advice of the Construction Management Team.
- Ensure that construction and traffic management matters are taken into account when considering Contractors' construction methods and materials at all stages;
- Be aware of any potential construction and traffic management and also 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 plant suggested is environmentally suited to the task in hand;
- Co-ordinate construction and traffic management planning of CMT activities to comply with environmental authorities' requirements and with minimum risk to the environment. 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;
- Be aware of any potential construction and traffic management risks relating to the Contractors and bring these to the notice of the appropriate management; and
- Ensure materials/waste register is completed.

11.3 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 construction and traffic management Officer in the implementation and development of the CTMP at the site;

- To conduct all their activities in a manner consistent with regulatory and best construction and traffic management practice;
- To participate fully in the construction and traffic management training programme and provide management with any necessary feedback to ensure effective construction and traffic management at the site; and
- Adhere fully to the requirements of the site construction traffic management and environmental rules.

12 Project construction and traffic management Policy

The developer recognises and seeks to minimise the impacts of the development on local businesses and pedestrian and vehicular traffic. The appointed contractor will be committed to:

- Carrying out the Project in full compliance with all applicable construction and traffic management regulations and to other requirements to which we subscribe.
- Implementing good construction and traffic management practice as part of designs, e.g. carry out design reviews, risk assessments, etc. on all relevant projects.
- Continually improving Project construction and traffic management performance by setting objectives and targets and implementing them through an environmental programme.
- Informing all project employees about construction and traffic management Policy and explaining what they should do to protect the local infrastructure and management of pedestrian traffic.
- Implementing this Policy through the successful operation of the CTMP.

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

12.1 Site Awareness

The following general site Construction and Traffic Management Rules will apply in relation to routes to and from the site. 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 main site entrance, canteen and near the entrances to construction works.

General Site Environmental Rules

→ Report any incidents or near misses that occur on site immediately to the site foreman;
→ Drive plant or machinery outside the authorised working boundaries of the site.
→ Maintain pedestrian access
→ Coordinate delivery schedules

If in Doubt, Ask the Site Supervisor for Further Information.

The main contractor will develop construction and traffic management 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 site offices.

The training of the site construction staff is the responsibility of the contractor/client. A brief outline of this CTMP 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.

12.2 Haulage routes

The increase in traffic as a result of construction shall be monitored and adjusted accordingly. The site is located in an urban area where restricted road and junction space is shared with vulnerable road users. The construction traffic will occur outside of peak background traffic hours within a 6 day week with minimal impact on the operation to the existing road network. Due to the location of the proposed development it will be necessary to co-ordinate the removal of debris off site along with the delivery of materials.

The main access to the site will be via the existing site entrance. Deliveries etc will be coordinated so as not to impede traffic.

The proposed haulage routes and associated mitigation measures for the construction phase will be as follows;

- At no time will construction associated vehicles be stopped or parked along the existing street.
- Haulage / delivery vehicles will not be allowed to travel in convoys of greater than two vehicles at any time.
- All loading of deliveries will take place within the site compound or temporary delivery zones.
- The Main contractor is to provide a detailed Traffic management plan
- Construction traffic flows and haul routes for disposal of construction material follow the existing traffic routes.
- Expected construction traffic during peak demolition activity on side will result in approximately 15 trucks per day which will equates to approximately 2 trucks per hour. This additional traffic generated is considered to be an insignificant addition.

The increase in traffic as a result of construction shall be minor and can be readily accommodated within the existing road network. However, the site is located where restricted road and junction space is shared with vulnerable road users and the flow of construction traffic will need to be monitored to ensure that potential conflicts are avoided as much as possible.

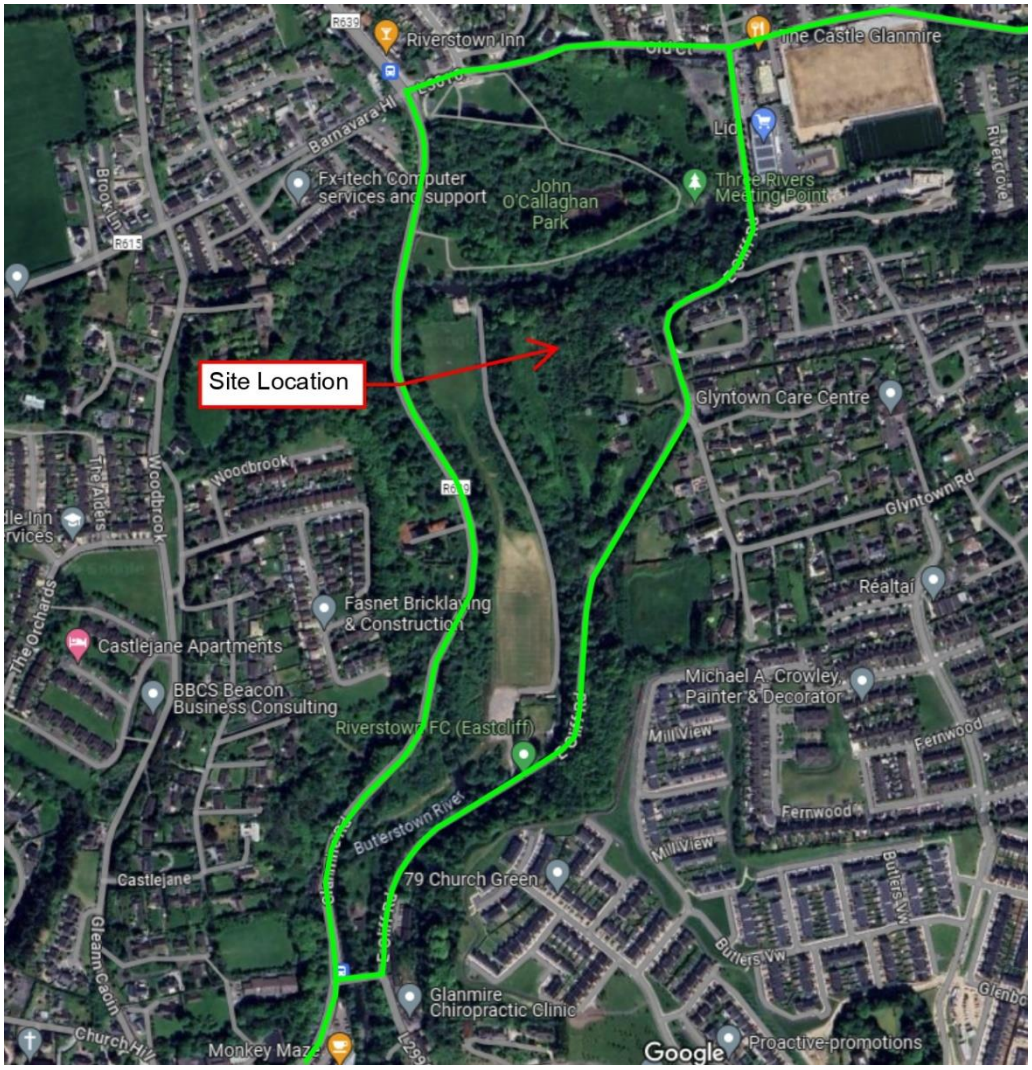

Figure 12-1 Site Traffic Access Route (Google Maps)

12.3 Pedestrian segregation

- Management of traffic and pedestrian movements will, be employed at the entrance and exit points from the site.
- Any works to be completed outside site boundary will be fully separated and fence off from members of the public.

12.4 Temporary Signage

To facilitate the construction phase, the contractor shall develop a site specific Traffic Management Plan illustrating the management measures they intend putting in place for regulating construction and pedestrian traffic. It shall outline the signage they shall provide in compliance with Chapter 8 of the Traffic Signs Manual. It shall be forwarded to the Cork City Council for approval before the commencement of the works onsite.

12.5 Temporary Road Markings/delineation

The Traffic Management Plan shall include proposals for any proposed Temporary Road Markings and barriers to delineate the construction traffic route. These markings will conform to the requirements of Chapter 8 of the Traffic Signs Manual.

12.6 Temporary Road Closure

Any road closure can only be operated under agreement with the Cork City Council.

12.7 Temporary Traffic Signals

Any proposals to operate Temporary Traffic Light Signals should conform to the requirements of Chapter 8 of the Traffic Signs Manual.

12.8 Arrangements for Local Access, Pedestrian and Cyclist Access

Any proposal to alter the existing vehicle access to the surrounding areas shall be agreed with Cork City Council.

12.9 Proposed Lighting Arrangements

There are no proposals to alter the existing lighting arrangements in the area. Any proposals to alter existing lighting arrangements can only be carried out under agreement with the Local Authority. Internal site lighting will be such that it does not cause nuisance to nearby dwellings.

12.10 Use of Flag Men

The Contractor shall utilise a flagmen during the project for all construction traffic. The contractor shall develop a specific MS to outline their purpose and work methodology. Where this occurs in public space it shall be agreed with the City Council.

12.11 Proposed Use of Barriers

To delineate access and provide vehicular/pedestrian separation the contractor shall establish internal site barriers. The arrangement of these barriers shall be set-out in the internal Site Set-up and Traffic Management Safety Plan.

12.12 Conclusion

This Construction Traffic Management plan identifies an indicative sequence of the works from the initial enabling works through to superstructure construction. Final adoption of the Construction Traffic Management Plan is between the Contractor and Cork City Council prior to construction commencing.