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PROPOSED RESIDENTIAL DEVELOPMENT AT PARKMORE, LONG MILE ROAD, DUBLIN 12, CO. DUBLIN

Outline Construction & Environmental Management Plan

March 2025

ROD
ROUGHAN & O'DONOVAN

Proposed Residential Development at Parkmore, Long Mile Road, Dublin 12, Co. Dublin

Outline Construction & Environmental Management Plan

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Proposed Development at Parkmore Industrial Estate, Long Mile Road, Dublin

Outline Construction & Environmental Management Plan

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1. INTRODUCTION

This Outline Construction & Environmental Management Plan (CEMP) has been prepared to address the procedures, sequencing and construction methodology anticipated by the Project Team engaged in the planning, liaison, and construction of the proposed development at Parkmore Industrial Estate, Long Mile Road, Dublin. The plan outlines proposals on traffic and environmental management measures to be adopted during construction. This document contains particular focus on avoiding or mitigating any potential adverse environmental effects that may arise from the construction process.

It is designed to be a live document which will eventually address how any planning conditions imposed on the project will be managed or discharged by the construction team. This report will inform the Contractor's Construction Management and Environmental Operating Plan for the construction stage. The Contractor will develop this plan further to outline the specific control measures that will be required to address the restrictions detailed herein.

The Outline CEMP incorporates 3 main elements:

(i) Description of the construction of the development and phasing thereof;

(ii) Traffic management considerations; and

(iii) Environmental management considerations.

2. DEVELOPMENT DESCRIPTION

2.1 Site location

The proposed residential development is located at Parkmore Industrial Estate, just east of the junction of the Long Mile Road and Robinhood Road. The net site is approximately 1.5 ha. The site is adjacent on all sides to industrial and commercial buildings, and has its own carparking facilities. At the south of the site, the development is adjacent to the Robinhood Stream (a tributary of the Walkinstown Stream). The stream flows in a northwest direction, and is approximately within 10m of the southern boundary of the site. The site falls within the proposed City Edge redevelopment zone, which envisages a transition from industrial to residential / urban land uses. The site is approximately 500m from the Luas Red Line stop at Kylemore.

An aerial image of the site is shown below with the subject lands outlined in red.

Figure 1: Aerial Photo of Site Location (Source: Google Earth)

2.2 Development Details

The development will comprise a Large-Scale Residential Development (LRD) on a site at Parkmore Industrial Estate, Long Mile Rd, Robinhood, Dublin, 12. The proposed development will comprise the demolition of existing industrial units, and construction of a mixed use, residential-led development within 4 no. blocks ranging in height from 06 to 10 storeys over semi-basement. The development will comprise the following: 436 no. apartments (studios; 1 beds; 2 beds and 3 beds) with commercial/employment units, creche, café and library. Provision of car, cycle and motorbike parking. Vehicular accesses from Parkmore Estate Road and additional pedestrian/cyclist accesses from the Long Mile Road and Robinhood Road. Upgrade works to the estate road and surrounding road network. All associated site development works and services provision, open spaces, ESB substations, plant areas, waste management areas, landscaping and boundary treatments.

The proposed development has a gross site area of approximately 1.9 hectares.

Surface water runoff during the operational stage has been accounted for within the drainage design. It is proposed to implementation sustainable drainage systems (SuDS) through the incorporation of engineered attenuation features and controlled discharge at all outfalls will control storm runoff rates so as not to exacerbate flooding and flood risk in the receiving watercourses.

Upgrades to the wider Uisce Eireann foul drainage network are to be undertaken as detailed in the Engineering Report for Planning along with upgrades to existing pedestrian / cyclist infrastructure along Long Mile Road as detailed in the Transport Impact Assessment Report that supplements this planning application.

2.3 Access

Vehicular access to the proposed development will be via the Parkmore Industrial Estate Spine Road. The Spine Road is accessed via a left-in / left-out priority junction from the Long Mile Road. The road is a cul-de-sac serving the existing industrial estate, with a turning head at its western end.

Construction access will be from the Parkmore Industrial Estate Spine Road.

As a left-in / left-out junction, not all movements are possible at the Spine Road / Long Mile Road junction. Traffic wishing to head eastward to the city will be required to turn around at the Long Mile Road / Naas Road hamburger junction. Traffic accessing the development from the west would approach via the Naas Road, before turning right onto Walkinstown Avenue and right again onto the Long Mile Road to turn left into the Spine Road.

2.4 Programme

It is anticipated that the construction of the proposed development will last approximately 18-24 months.

2.5 Working Hours

Except where otherwise agreed with South Dublin County Council, working hours will be 07:00 – 19:00 Monday to Friday and 08:00 – 18:00 Saturday and closed on Sundays.

3. CONSTRUCTION OF THE DEVELOPMENT

3.1 Pre-Start Survey

A pre-Start Survey of the site and surrounds will be carried out prior to construction works commencing. This will consist of a photographic aided report on the existing environment including; existing structures, boundaries, footpaths, roads, access points, fences lines, walls, hedge lines, kerb lines, lighting columns and road signs. The findings of the survey will be documented and stored by the Contractor. The Contractor will also be required to undertake pre-construction condition surveys of nearby properties in consultation with the property owners.

3.2 Security

The Contractor will secure the site prior to any works commencing. Any parts of the site remaining in use by the public – e.g. for the continuance of operations at the public house, will be securely cordoned off. The Contractor will be responsible for the ongoing maintenance and upkeep of security measures, and for controlling access onto the site.

3.3 Construction site compounds & accommodation, welfare & storage

The Contractor will provide temporary accommodation on the site, as required. The exact location of these facilities may be adjusted as required during the course of construction. Initially offices and storage containers will be transported to the site to provide accommodation and welfare facilities for workers in advance of the works commencing.

3.4 Existing Structures and Buildings

There are existing warehouse units on site to be demolished as part of the works.

3.5 Excavation

Excavated material from the site will be tested accordingly. Acceptable material can be recycled and used as part of the development or as import on other schemes, while unacceptable material will be transported off site to a licensed waste disposal facility.

Excavation and construction works will be carefully managed to ensure no contamination of watercourses as a result of the construction work. This will involve ensuring that no dirty water from site enters the surface water sewerage network. The Contractor will be required to follow best practice in respect of the protection of watercourses during all stages of construction. Any surface water encountered during this phase will be pumped to the foul sewerage network during periods of low flow in agreement with the relevant authorities or pumped to tankers and removed from site. In the event of an unexpected underground stream being encountered, this will be diverted in consultation with relevant agencies before excavation works continue.

3.6 Phasing of Works

Works will be undertaken as one continuous process following completion of the site preparation and excavation works. The main works construction does not involve any unusual or exceptional construction techniques and will be constructed of in situ or precast concrete elements constructed form the bottom up using scaffolding and temporary support structures as appropriate. Concrete pours will be managed so as to prevent the risk of any spillage outside the formwork.

Cladding, fit-out and finishing works will be undertaken as the main structural shell elements are completed. As each section of the works is made weather tight, working upwards from the ground floor, the internal fitting out will commence including first fix services installations. The ceilings will then be installed in conjunction with the second fix services followed by joinery, floor finishes and decoration. Inspections and snagging will then be carried out, final testing and commissioning completed and a final clean prior to handover and completion of the ICT installations.

The external works adjacent to the new buildings will generally be carried out when the roof and envelope to the new building has been completed and access scaffolding has been removed.

3.7 Protecting Existing Buildings in the Vicinity of the Site

There are a number of existing industrial buildings in close proximity to the site. Measures will be taken throughout the construction stage of the proposed development in order to safeguard these dwelling against accidental damage. Any excavations will be kept a safe distance from existing premises and adequately protected to safeguard these buildings from damage. Excavation of rock will be undertaken with strict limits on noise and vibration so as to avoid the risk of any damage to the buildings. Construction methods will be adopted to reduce the noise and vibration levels on site and working hour restrictions imposed by the planning permission will be respected in order to reduce disruption to neighbours. These will only be deviated from exceptionally with the agreement of South Dublin County Council.

3.8 Site Compound

The Contractor will provide temporary accommodation on the site, as required. The exact location of these facilities may be adjusted as required during the course of construction.

3.9 Site Security

The Contractor will be responsible for securing all parts of the site from public access, including works zones and the site compound. Sufficient safety zones will be required around any lift areas.

3.10 Logistics and Craneage

It is anticipated that a tower crane will be used on site for most of the superstructure and cladding phases. The exact location of the tower crane footings and loading areas will be determined by the Contractor in consultation with the Local Authority.

3.11 Associated Civil Works

As part of the works, it is proposed to provide approximately 360m of foul network extension along regional road R112 (between regional roads R110 and R810) to divert flow from an existing 225mm diameter sewer to the 9B trunk sewer. The full details of this extension of the Uisce Eireann Network are outlined within the Engineering Report for Planning.

Upgrades to the wider road network which include the provision of a new 4.0m wider combined pedestrian / cycle path along Long Mile Road. The full details of these upgrades are outlined within the Transport Impact Assessment Report.

4. CONSTRUCTION TRAFFIC MANAGEMENT – ROAD NETWORK AND SITE TRAFFIC

4.1 Site Access and Road Safety

Vehicular access to the proposed development will be via the Parkmore Industrial Estate Spine Road. The Spine Road is accessed via a left-in / left-out priority junction from the Long Mile Road. The road is a cul-de-sac serving the existing industrial estate, with a turning head at its western end.

Construction access will be from the Parkmore Industrial Estate Spine Road.

As a left-in / left-out junction, not all movements are possible at the Spine Road / Long Mile Road junction. Traffic wishing to head eastward to the city will be required to turn around at the Long Mile Road / Naas Road hamburger junction. Traffic accessing the development from the west would approach via the Naas Road, before turning right onto Walkinstown Avenue and right again onto the Long Mile Road to turn left into the Spine Road.

All Traffic Management proposals will be agreed with South Dublin County Council and An Garda Síochána prior to construction of the development. Significant traffic management installations or changes will be subject to Road Safety Audits, as required by the Local Authority. The Contractor's security arrangements will include protocols for managing all construction traffic movements to and from the site.

4.2 Constraints

There will be no major constraints to traffic on the surrounding roads during the construction works. Surface water, foul and water supply connections will involve only short term and minor interference with the road network, and traffic conditions will not cause inconvenience to residents. A diversion of an existing watermain is required along the footpath on Robinhood Road and Long Mile Road while an extension of the existing foul network along regional road R112 (between regional roads R110 and R810) is required. Upgrades to the existing pedestrian and cyclist facilities along Long Mile Road are also to be undertaken. The contractor will implement traffic / pedestrian management measures during the course of these works.

Given the constrained nature of the site, most deliveries will be on a "just-in-time" basis, since the scope to store materials on the site is extremely limited.

4.3 Maintenance of Public Roads

There will be potential for delivery vehicles and other site traffic to carry mud and silt onto the public roads when exiting the site. In order to prevent this, a wheelwash will be utilised on site at all egress points in use by construction traffic. This will be used as required to wash down vehicles prior to leaving the site. Dirty water from the wheelwash will be prevented from entering the municipal surface water drainage system.

The site layout during excavation works will be designed to ensure vehicles do not enter the works area unless necessary for the excavation and soil removal processes. All machinery leaving the works area will be thoroughly cleaned before being allowed on to public roads.

A road sweeper (including vacuum) will be in place (as required) to unsure cleanliness of nearby and haul roads (where necessary), particularly during enabling works.

Roadside gullies will be maintained by the road sweeper contractor. Road line markings will be monitored and markings that require replacement throughout the duration of the project will be replaced by a specialist contractor.

4.4 Traffic Movements

Based on the anticipated site working hours, traffic movements by workers will generally be outside the road network peak periods, which are 0800 – 0900 and 1700 – 1800 according to the Transport Impact Assessment Report. Truck movements will generally be restricted at peak periods to avoid exacerbating rush-hour traffic, and to minimise interaction with vulnerable road users – especially cyclists - during these periods.

4.5 Parking

The contractor will provide parking for construction vehicles during the construction of the works.

Secure, covered bicycle parking will be provided, and the use of bicycles by construction workers will be encouraged. Workers will also be encouraged to use public transport services where possible.

5. ENVIRONMENTAL MANAGEMENT SYSTEM

5.1 Identification

Prior to commencement of site works, the Design Team and the Contractor will convene to identify the potential environmental issues which may arise throughout the duration of the Project. These will include off-site issues and cover the design, construction and commissioning phases of the Project, up to handover to operations staff. Each issue will be entered on a register of environmental risks.

5.2 Assessment

The Project Team will undertake an assessment of each of the identified environmental risks. This assessment will produce a clear definition of the risk, the potential impacts it may have and the consequences arising from the occurrence of the risk. The findings will be entered on the register of environmental risks.

5.3 Mitigation

Mitigation measures will be devised based upon the individually assessed risks. These could range from changes in design to remove the risk to on-site precautions to manage the risk and prevent the impact being realised. The agreed mitigation measures will be entered on the register of environmental risks. Any specific mitigation measures defined by planning conditions will also be addressed.

5.4 Monitoring, Recording & Reviewing

The register of environmental risks will act as the management tool for the control of environmental issues arising for the project. It will be reviewed on a regular basis to identify the efficacy of the mitigation measures employed based upon the monitoring data collected and records kept.

5.5 Minimising the Environmental Impacts

The Project Team and all its employees shall conduct their work in such a manner that unnecessary risks and disturbance to the environment are avoided. As part of the Environmental Management System, personnel are made aware of issues which may impact on the environment, and are encouraged to act responsibly.

5.6 External Stakeholders

With respect to environmental impacts, consultations will be undertaken with the Local Authority (South Dublin County Council) and relevant environmental stakeholders as required.

5.7 Noise & Vibration

Noise will be generated from excavation works, from delivery vehicles and from concreting operations. Noise hoarding will be erected around noisy equipment / activities where necessary.

A noise and vibration control management plan shall be prepared by the contractor and shall be submitted in writing to South Dublin County Council's air quality monitoring and noise control department for approval in advance of the works commencing. The restrictions of the noise and vibration control management plan will include:

1) Contractor to comply with all prevailing legislative requirements;

2) All plant to comply with all prevailing legislative requirements, CE marked, and maintained and tested accordingly;
3) All plant and machinery to be switched off when not in use;
4) Noise and vibration limits to be prescribed in construction contract, and monitoring to be implemented at sensitive receptors. Management plans to be prepared for addressing any exceedances;
5) Ensure plant and equipment have properly operating silencers / mufflers;
6) Consider the location of noisy plant in order to minimise nuisance to nearby houses, motorists, and wildlife;
7) Specific measures to be included to monitor noise and vibration during granite excavation works, and the same noise and vibration limits will apply.

More detail is included in **Appendix B**.

5.8 Air and Dust

Dust is a nuisance and can be damaging to humans, machinery, plants and animals. All workers on site are to consider the nuisance caused by the impacts of dust. The effects of dust will be minimised using the following techniques;

- Avoid creating unnecessary dust.
- Cover materials which could create dust when windy.
- Dampen down dust in operations which create dust.
- Ensure that vehicles leaving site do not leave mud on the road.

More detail on the specific restrictions is included in Appendix B.

5.9 Waste Management

The proper management and handling of waste on site is essential to ensure that pollution and increased levels of contamination are minimised. Effective management of waste on site will consist of the following measures;

- Closed skip containers.
- Non dumping/littering policy on site.
- Waste segregation.
- Regular clean up of the site.
- Careful handling and transportation to avoid damage to raw materials.
- Efficient ordering.

More detail is included in the Construction and Demolition Waste Management Plan included in **Appendix A**.

5.10 Water Pollution

Measures shall be taken to ensure that the groundwater related to the site does not come into contact with higher proportions of contaminants during the construction activity. Surface water in the vicinity ultimately discharges to Dublin Bay, which is an SPA, SAC and UNESCO Biosphere, and it is of paramount importance that these waterways are not affected during the construction works.

The following avoidance measures are proposed to prevent the occurrence of any pollution incidents:

- Throughout all stages of the construction phase of the project the contractor will ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the requirement to avoid water pollution of all types.
- Fuels, oils, greases and hydraulic fluids will be stored in bunded areas well away from any surface water gullies. Refuelling of machinery, etc., will be carried out in bunded areas.
- Runoff from machine service and concrete mixing areas will not enter any watercourse or groundwater.
- Areas for the stockpiling of materials will be kept to a minimum size, well away from any watercourse or permeable ground. It is noted that there is extremely limited scope for the stockpiling of materials on site.
- Any small short-term storage of excavated material shall be kept away from drains and shall be covered with high grade plastic in order to prevent runoff from entering groundwater.
- An emergency plan to deal with accidental spills within the confines of the site, and always at a safe distance from the surface water sewerage network, will be drafted with the inclusion of the relevant stakeholder contact details.
- Any water collected in excavations will be treated as contaminated material and pumped into the foul runoff system or removed from site in tankers until the surface water infrastructure is complete, flow controls installed and inspected. Desilting and petrochemical interception of all surface runoff/pumped water will take place for the length of the construction project, using standard techniques including silt buster/silt socks, local silt traps throughout the site, etc.
- A petrochemical interceptor will be placed on the surface water network prior to discharge.
- Bunds will be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination. Any water-filled excavations, including the attenuation tank during construction, that require pumping will not directly discharge to the surface water network. Prior to discharge of water from excavations adequate filtration and petrochemical interception will be provided to ensure no deterioration of water quality and ensure compliance with the Water Pollution Acts.
- Wastewater from the temporary staff facilities will be discharged to sealed contaminant systems, and disposed via licensed contractors.
- The pouring of concrete, sealing of joints, application of water-proofing paint or protective systems, curing agents, etc will be completed in the dry to avoid pollution of the freshwater environment. Method statements for these activities will be agreed prior to commencement.

5.11 Light Pollution

Lighting shall be focussed and controlled during the construction phase.

APPENDIX A
CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

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Proposed Development at Parkmore Industrial Estate, Long Mile Road, Dublin 12

Outline Construction and Demolition Waste Management Plan

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1. INTRODUCTION

This outline Construction and Demolition Waste Management Plan (CDWMP) has been developed to ensure that waste arising on-site during the construction and demolition phase of the proposed development at Parkmore Industrial Estate will be managed and disposed of in a way that ensures the provisions of the Waste Management Acts, 1996-2011 and associated Regulations (1996-2011) are complied with and to ensure that optimum levels of reduction, re-use and recycling are achieved. This report should be read in conjunction with the Outline Construction Management Plan.

This Outline CDWMP has been prepared for the provision of waste management for the demolition and construction phases of the proposed development, taking into account the relevant guidance documents on the management and minimisation of construction and demolition waste, including:

- DEHLG (2006) *Best Practice Guidelines on the Preparation of Waste Management Plans for construction and Demolition Projects*. Department of Environment, Heritage and Local Government, Dublin;
- Provisions of the Waste Management Acts, 1996-2011 and associated Regulations;
- Construction Industry Research and Information Association (CIRIA) document 133 Waste Minimisation in Construction;
- TII (2014) *Guidelines for the Management of Waste from National Road Construction Projects*. Transport Infrastructure Ireland, Dublin; and,
- National Construction & Demolition Waste Council (NCDWC) 2006 *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects.*

This Plan is intended to be a working document and has been prepared to inform the implemented CDWMP which, in turn, will form an integral part of the Environmental Operating Plan (EOP). This document is preliminary in nature as it has been prepared at a stage when quantities are based on the design developed to a sufficient level of detail to inform the environmental impacts to be assessed in the planning process. However, changes may occur during detailed design stages which may alter the volumes of waste created during the construction and demolition phases.

All materials used during construction will be imported.

Prior to the commencement of construction works, a Waste Management Co-ordinator (WMC) (who may also be the Site Environmental Manager) will be appointed by the Contractor to assume responsibility for the further development of the CDWMP and the management and treatment of all waste materials created during the construction of the proposed development.

The Contractor's CDWMP must contain (but not be limited to) the following measures:

- Details of waste storage (e.g. skips, bins, containers) to be provided for different waste and collection times;
- Details of where and how materials are to be disposed of, i.e. landfill or other appropriately licensed waste management facility;
- Details of storage areas for waste materials and containers;
- Details of how unsuitable excess materials will be disposed of, where necessary;

- Details of how and where hazardous wastes such as oils, diesel and other hydrocarbon or other chemical waste are to be stored and disposed of in a suitable manner; and
- Details of locations of waste storage.

Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects were published in 2006 by the National Construction & Demolition Waste Council (NCDWC). These Guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These Guidelines have been followed in the preparation of this report.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Description of the Proposed Development

The development will comprise a Large-Scale Residential Development (LRD) on a site at Parkmore Industrial Estate, Long Mile Rd, Robinhood, Dublin, 12. The proposed development will comprise the demolition of existing industrial units, and construction of a mixed use, residential-led development within 4 no. blocks ranging in height from 06 to 10 storeys over semi-basement. The development will comprise the following: 436 no. apartments (studios; 1 beds; 2 beds and 3 beds) with commercial/employment units, creche, café and library. Provision of car, cycle and motorbike parking. Vehicular accesses from Parkmore Estate Road and additional pedestrian/cyclist accesses from the Long Mile Road and Robinhood Road. Upgrade works to the estate road and surrounding road network. All associated site development works and services provision, open spaces, ESB substations, plant areas, waste management areas, landscaping and boundary treatments.

The proposed development has a gross site area of approximately 1.9 hectares.

The details of the proposed development and the likely construction sequence will comprise the following:

- Site clearance to include removal of existing buildings;
- Excavation to allow construction of the lower ground / basement level;
- Construction of connections to external utilities and services including upgrades to wider Uisce Eireann foul drainage network;
- Construction of apartment block;
- Construction of pedestrian / cycling infrastructure upgrades along Long Mile Road;
- Services, finishes and landscaping works.

2.2 Construction Stage

It is anticipated that the construction of the proposed development will last approximately 18-24 months.

2.3 Construction Procurement

It is envisaged that the construction of the proposed development will be tendered privately.

3. WASTE MANAGEMENT STRATEGY

3.1 Scope

The Contractor will develop a CDWMP that will detail:

- Licensing of Waste Disposal;
- Site clearance;
- Measures to protect surface water run-off quality;
- Excavations and disposal of materials;
- Importation and stockpiling of materials;
- Construction vehicle management; and
- Dust and noise abatement measures.

3.2 Waste and Recycling Management

The management of construction and demolition waste will reflect the waste management hierarchy, with waste prevention and minimisation being the first priority, followed by reuse and recycling. During site clearance and construction works, there are numerous opportunities for the beneficial reuse and recycling of materials. The subsequent use of recycled materials in reconstruction works also reduces the quantities of waste which ultimately needs to be consigned to landfill sites.

The Contractor will develop and implement a plan and manage all waste with a goal of achieving the waste hierarchy in accordance with the relevant statutory provisions as shown in Figure 3.1.

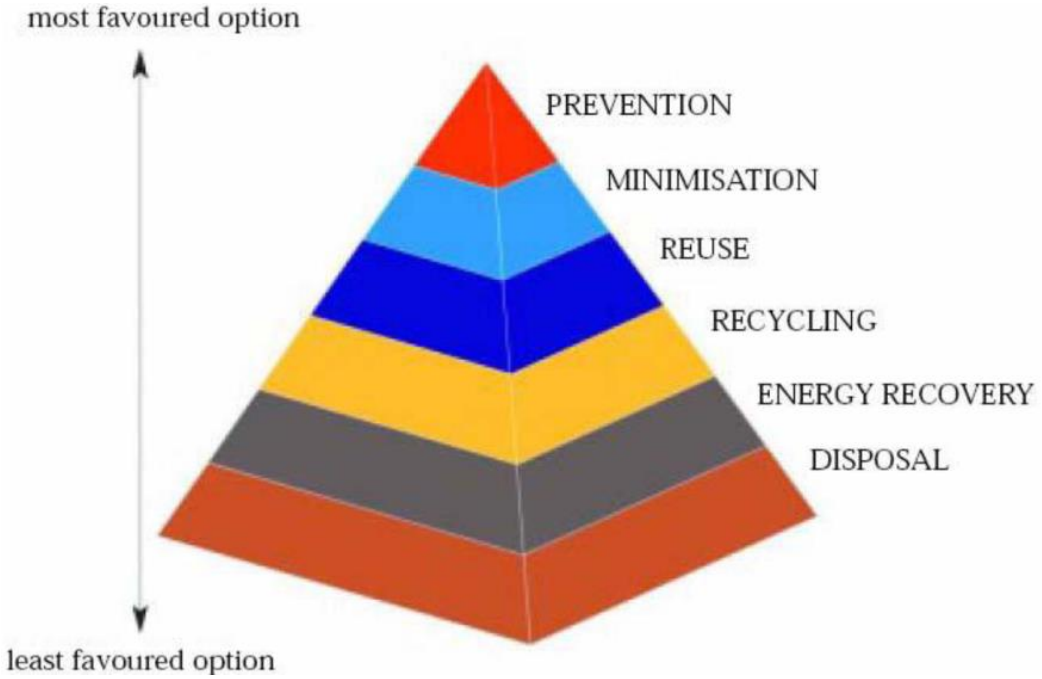

Figure 3.1 The Waste Management Hierarchy [DEHLG (1998) *Changing Our Ways*. Department of the Environment, Heritage and Local Government, Dublin]

Source Segregation

Wastes generated on the construction site will be identified and segregated according to their respective categories, as described by the European Waste Catalogue (EWC).

Where possible, metal, timber, glass and other recyclable material will be segregated and removed off-site to a permitted/licensed facility for recycling.

In order to achieve this, designated waste storage areas will be for the storage of segregated wastes prior to transport for recovery/disposal at suitably licensed / permitted facilities. Suitably sized containers for each waste stream will be provided within the waste storage area and will be supervised by the WMC, who will be appointed by the Contractor. This will be the person responsible for the management of waste during the construction of the proposed development. The number and sizing of containers will be agreed with Waste Contractors in advance of construction works commencing. Source segregation of waste will result in cost savings to the project as well as providing an environmentally sound route for the management of all construction and demolition wastes.

Re-use

Possibilities for re-use of clean, non-hazardous excavation material as fill on the site or as aggregate for construction materials will be considered following appropriate testing to ensure material is suitable for its proposed end use. Hazardous materials are not expected on the site, and this will be confirmed by materials testing during the excavation works.

Where excavated material is not to be reused within the works, the Contractor will endeavour to send material for recovery or recycling so far as is reasonably practicable. The Contractor will ensure that, if required, any off-site interim storage facilities for excavated material have the appropriate waste licences or waste facility permits in place. The majority of the material excavated from the site will be granite, which can be salvaged for re-use off-site.

Material Management

In order to prevent and minimise the generation of waste, the Contractor will be required to ensure that raw materials are ordered so that the timing of delivery, the quantity delivered, and the storage is not conducive to the creation of unnecessary waste. The Contractor, in conjunction with the material suppliers, will be required to develop a programme showing the estimated delivery dates and quantities for each specific material associated with each element of construction and demolition works. Following a "just-in-time" approach improves cash flow, better utilises storage space, reduces risk of environmental pollution events and reduces potential loss to theft and accidental damage as well as making the site safe r. The constrained nature of the Parkmore Industrial Estate site requires this approach to be followed, given the extremely restricted nature of the site and the associated limitations on scope to store materials on-site.

It is essential that the planning, excavation and construction works are undertaken in close collaboration with waste management contractors, in order to determine the best techniques for managing waste and to ensure a high level of recovery of materials for recycling. This will also have the benefit of minimising the volume of construction vehicle movements required. The Contractor will be required to continuously seek to improve the waste management process on-site during all stages of construction and maximise opportunities for re-use and recycling where they exist. For example, in relation to waste packaging, the Contractor will seek to negotiate take-back of as much packaging waste as possible at source to ensure maximum recycling. The CDWMP will be included as an agenda item at the weekly construction meetings. In addition, the plan will be communicated to the whole team (including the Client) at the monthly meetings. This will include any updates to earlier versions of the document.

Waste Auditing

The Contractor will record the quantity (in tonnes) and types of waste and materials leaving the site during the construction phase. The name, address and authorisation details of all facilities and locations to which waste and materials from the construction phase are delivered will be recorded along with the quantity of waste (in tonnes) delivered to each facility. Records will show all material recovered and disposed of.

The waste management strategy for the project will follow the accepted waste hierarchy and the Contractor will implement the following types of measures to reduce waste and maximize opportunities for recycling:

- Wherever possible, materials for construction activities will be ordered to ensure the minimum possible storage time;
- Materials will be ordered, where possible, in sizes to prevent wastage;
- Appointment of a WMC, who will be responsible for handling, storage and delivery of materials to the proposed development;
- Ensure that stored material is protected from damage from plant and environmental factors such as rain and wind;
- Secure storage areas to prevent unauthorised access;
- Establish a waste management compound to handle incoming waste from construction activities – this will facilitate the segregation of key waste streams to maximise the opportunity to re-use, recycle and return wastes generated on-site;
- Provide a separate secured area for dealing with hazardous waste; and,
- Provide separate facilities for the storage of fuels and chemicals.

3.3 Waste and Recycling Targets

The Contractor's CDWMP, waste handling and proposed construction methods will endeavour to achieve the following targets:

- The re-use of excavated earthworks materials on-site where possible. The scope for this is likely to be limited, due to the restrictions on storage capacity on-site. Therefore, the Contractor will seek to ensure the re-use of materials off-site where practicable, which will also have financial benefits for the Contractor;
- 100% recycling of surplus reinforcement and other metals, where possible; and,
- No contamination of skips.

3.4 Waste and Recycling Opportunities

The Contractor will seek opportunities, wherever possible, to reduce the amount of waste generated on site and maximise the potential for recycling materials in accordance with the waste hierarchy through the following:

- Storing materials in designated areas and separate from wastes to minimise damage;
- Returning packaging to the producer where possible;
- Segregating construction and demolition wastes into reusable, recyclable and non-recyclable materials;
- Reusing and recycling materials on site during construction where practicable;
- Recycling other recyclable materials through appropriately permitted/licensed contractors and facilities; and,

- Disposing of non-recyclable wastes to licensed landfills.

4. WASTE DISPOSAL LICENSING

4.1 Licensing Requirements

Under the Waste Management (Collection Permit) (amended) Regulations, 2016, a waste collection permit for appropriate EWC Code(s) and designations is required by a waste haulier to transport waste from one site to another. Compliance with the Waste Management (Shipments of Hazardous Waste in Ireland exclusively) Regulation, 2011 is also required for the transportation of hazardous waste by road. The export of waste from Ireland is subject to the requirements of the Waste Management (Shipment of Waste) Regulations, 2007. The Contractor will ensure that the transport and movement of all waste is carried out in compliance with these requirements.

Waste may only be treated or disposed of at facilities that are licensed to carry out that specific activity, *e*.*g*. chemical treatment, landfill or incineration, for a specific waste type. Records of all waste movements and associated documentation will also be held on-site. Generally, operators of waste management sites will facilitate a site visit and inspection of documentation if deemed necessary. Prior to any on-site recovery process, including the operation of mobile plant, an operator must apply to the governing local authority for a waste facility permit under the Waste Management (Facility Permit and Registration) Regulations, 2007. It is planned that waste activities at the site will comprise of source segregation, storage and collection and, therefore, it is highly unlikely that any waste licensable or waste permissible activity will be undertaken.

4.2 Exclusion from Legislation

The Directive on Waste contains a number of exclusions which make clear that certain materials are not subject to its requirements. A key exclusion affecting construction projects such as this development is set down in Article 2(1)(c). This states that the requirements of the EU legislation do not apply to:

> *"uncontaminated soil and other naturally occurring material excavated in the course of construction activities where it is certain that the material will be used for the purposes of construction in its natural state on the site from which it was excavated"*

This provision is repeated in the Waste Management Acts, as amended by the European Communities (Waste Directive) Regulations, 2011 (SI No. 126/2011). Should materials generated by construction activities fall within this provision (as most of the excavated materials are expected to), they are not then subject to the other requirements of the EU or national waste legislation. This means that, for example, such materials are not defined as "waste", do not need to be handled by duly authorised waste collectors and do not need to pass to disposal or recovery facilities that are subject to waste licences or other equivalent form of statutory authorisation. In addition, the requirements of the Waste Hierarchy do not apply.

5. PROPOSED CONSTRUCTION METHODOLOGY AND MATERIAL USAGE

5.1 Site Preparation

The construction of the proposed development will require site clearance as part of the development. Site preparation will include site clearance which comprises demolition of several structures and service diversions.

The Contractor's CDWMP will take the following into account:

- The extent of the areas to be cleared and the potential types and volumes of arisings;
- The location of any structures to be demolished;
- Statutory requirements; and
- Specific environmental requirements and standard ecological seasonal requirements.

5.2 Site Offices, Construction Compounds and Security

The Contractor will provide temporary accommodation on the site, as required. The exact location of these facilities may be adjusted as required during the course of construction. Initially offices and storage containers will be transported to the site to provide accommodation and welfare facilities for workers in advance of the works commencing. As the building construction advances, site offices can be moved into the completed lower storeys.

During the construction stage, standard construction and site management practices will be implemented by the contractor (e.g. CIRIA Guideline Document C532 Control of Water Pollution from Construction Site). All fuels, oils, solvents and paints used during construction will be stored within specially constructed dedicated temporary bunded areas or within bunded containers. Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles, will take place away from surface water gullies or drains. Spill kits and hydrocarbon absorbent packs will be stored in the site compound and operators will be fully trained in the use of this equipment. Fuel for vehicles will be stored in a mobile double skinned tank. Silt and sediment barriers will be installed at the perimeter of earthworks construction areas to limit transport of erodible soils outside of the site. The compounds will also have appropriate levels of security to limit potential vandalism, theft and unauthorised access within the construction compound(s).

Following completion of construction, any residual compound areas will be cleared, landscaped and paved. Temporary buildings and containers, parking areas and waste material such as rubble, aggregates and unused construction materials will be removed and disposed of appropriately.

5.3 Material Quantities

The proposed development will involve reuse of existing materials where possible, export of materials that cannot be reused on-site (hazardous and non-hazardous) and importation of required construction materials.

5.4 General Construction and Demolition Works

Quantities of general construction and demolition wastes are made up of waste such as wood, packaging, metals, plastics, bricks, blocks, canteen waste and some

hazardous waste, *e.g*. oils, paints and adhesives. Site clearance and residual waste will be generated during the construction phase, primarily from the construction of the proposed development.

Table 5.1 shows the breakdown of the construction and demolition waste types (from EPA data) produced on a typical construction site. A more detailed estimate of the anticipated quantities of these materials will be provided in the CDWMP following appointment of the Contractor at construction stage.

Table 5.1: Waste Materials Generated on the Construction Site

Waste Type	Proportion (%)
Non – hazardous inert material	45
Hazardous material	25
Non- hazardous material but exceeding inert levels	30
Total Waste	**100**

An overview of the methods to manage the primary waste streams expected is presented below. The main types of construction waste produced will be:

Excavated material

Where short-term temporary storage is unavoidable, the method of storage of material will be key to its potential use as certain types of materials are likely to degrade if left uncovered in wet weather due to low plasticity and a silty nature.

Concrete

Waste concrete is likely to arise during the construction phase of the proposed development. It is proposed that waste concrete generated will be returned to the supplier for re-use. For every tonne of concrete waste that is recycled for aggregate in new concrete, significant savings are made in energy and carbon dioxide emissions. It also saves money by avoiding disposal costs. Residual concrete waste will be source segregated and stored in designated containers at the waste storage area for subsequent separation and recovery at a remote facility.

Metals

Metal waste has a significant scrap value. Although it is now common practice for sites to segregate metals for reuse and recycling, there are still sites where metal is thrown away with general rubbish. One of the primary sources of metal waste is steel reinforcement. Wastage of steel reinforcement will be reduced by ordering made to measure steel from the manufacturer and detailed scheduling of all reinforced concrete structural elements.

Skip hire companies may provide free skips for the storage of scrap metal on sites and this will be investigated prior to construction commencing. When metal storage containers are full, they will be removed by the waste storage contractor and sent to a metals recycling facility.

Timber

Timber waste will be stored separately as it is readily contaminated by other wastes and if it is allowed to rot, it will reduce the recyclability of other stored wastes. Any pallets will be returned to the supplier for re-use. Off-cuts and trimmings will be used in formwork where possible. A container for waste wood will be covered where

possible and will be placed in the waste storage area. The waste wood will be collected by a waste contractor who will forward it to a wood recycling facility for chipping.

Treatment of timber with chemicals and the overuse of nails will be minimised and avoided as this will make it difficult to reuse/recycle the timber afterwards. The utilisation of reclaimed timber products will also be investigated.

Packaging and Plastic

Packaging waste can become a major problem on construction sites. Double handling will be avoided by segregating packaging wastes immediately after unwrapping. Many suppliers are now prepared to collect their own packaging for recycling, and this will also be investigated prior to works commencing. It is intended that, where possible, materials with recycled packaging will be purchased. Waste packaging will be segregated and stored in separate containers, preferably covered, in the waste storage area for collection by the waste management contractor and distribution to packaging recycling facilities.

Blocks, Bricks and Tiles

The careful storage of these raw materials will significantly reduce the volume of these wastes arising on site. The most likely wastes produced will be off-cuts, trimmings and waste arising from breakages. Every effort will be made to use broken bricks and off-cuts.

Hazardous Wastes

Prior to removal from the site, any hazardous waste identified will undergo a comprehensive waste assessment and classification by a suitably qualified person in accordance with the European Waste Catalogue and Hazardous Waste List. It should be noted that if non-hazardous waste becomes contaminated with hazardous waste the entire load will be considered hazardous. It is, therefore, critical to ensure that waste segregation areas are provided and are used properly to separate out hazardous, non-hazardous and inert waste arising. Hazardous wastes will be identified, removed and kept separate from other construction and demolition waste materials in order to avoid cross-contamination. Specific method statements detailing the necessary mitigation measures required during excavation, handling transportation and disposal of hazardous wastes encountered on the site will be prepared as required.

The likely disposal/treatment options for any hazardous wastes available to the Contractor will depend on the nature of the hazardous material and the concentration of parameters of concern. The costs associated with treatment and disposal will similarly vary depending on the concentration of parameters of concern and on the tonnage involved. There are several operators/facilities in operation within Ireland that could potentially accept the contaminated material depending upon the results of the Waste Acceptance Criteria testing or assist in the export of the material abroad for special treatment where required. Full details of the disposal route for hazardous wastes will be provided in the CDWMP following the appointment of the Contractor and completion of the further investigations required.

Hazardous Liquids (Oils, Paints, Chemicals)

Hazardous liquid waste arising from the construction process will require careful handling. Oils, paints, bitumen, adhesives and chemicals will be kept in a separate contained storage area which will be locked when not in use. Lids will be kept on containers in order to avoid spillage or waste by evaporation. Waste oils, paints and

chemicals, including the containers, will require careful handling and disposal. These will be stored in a containment tray with a capacity to contain 110% of the volume of the largest container.

Fuels and chemicals will be stored in double-skinned containers or within a bund, i.e. an impervious structure with the capacity to contain 110% of the volume of the largest tank stored within it. All containers will be carefully labelled.

Food Wastes

Site staff generate food waste and packaging waste. Designated receptacles will be provided to allow for the segregation and storage of individual waste streams. These will include receptacles for food waste, *e.g*. brown bin for waste foods and peelings, dry recyclables, *e.g*. green bin for packaging, plastics, metals, wood, paper, cardboard and tetrapack, and residual bin, *e.g*. black bin for mixed food and packaging waste. Separate receptacles for the recyclable fractions may be provided such as plastics, metals, glass and this will be designed and detailed by the Waste Management Co-ordinator in consultation with the selected Waste Management Contractor.

Other Wastes (Residual)

Waste material other than those outlined above can constitute a significant proportion of the total waste generated by a construction site. This waste is normally made up of residual, non-recyclable waste such as soiled paper, cloth, cardboard or plastics, as well as food waste and general waste found on the site. Given the heterogeneous nature of this material, it is most important that residual waste is kept separate from the other waste streams to avoid contamination. This material will be stored in a dedicated container in the waste storage area. Container size and collection frequency will be assessed with waste management contractors as works proceed. All residual wastes will be dispatched to a suitably licensed facility for disposal. Other construction and demolition waste material will be collected in receptacles with mixed construction and demolition waste materials for subsequent separation and disposal at a segregation facility.

6. ASSIGNMENT OF RESPONSIBILITIES

A WMC will be appointed who will have overall responsibility for waste management on the site. The Employer will receive summaries of any audit reports, which will be completed within three months of the end of each calendar year. The effectiveness and accuracy of the documentation may also be monitored on a regular basis by Site Supervision personnel. Following appointment of the preferred Contractor, the CDWMP will be updated in accordance with the final design and copies of the plan will be distributed to the Employer, the Site Manager and the site sub-contractors. The WMC appointed by the Contractor will be appropriately trained and experienced in all aspects of waste management. In addition, the WMC and the site crew must be in a position to:

- Distinguish reusable materials from material suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with the site manager on best locations for stockpiling reusable material;
- Separate material or recovery; and,
- Identify and liaise with operators of recovery outlets.

The WMC will be responsible for educating all site staff, sub-contractors and suppliers about the available alternative to conventional waste disposal. Training will also be given to all site staff in materials management on sites. The WMC will continually identify waste minimisation actions on sites and this will be updated in the CDWMP.

7. TRAINING

Copies of the CDWMP will be made available to all personnel on-site. All site personnel and sub-contractors will be instructed about the objectives of the plan and informed of the responsibilities that fall upon them as a consequence of its provisions. This is traditionally carried out during the induction process for new staff members. Where source segregation and material re-use techniques apply, each member of staff will be given instructions on how to comply with the CDWMP. Site notices will be designed to reinforce the key messages within the CDWMP and will be displayed prominently for the benefit of staff.

8. WASTE RECORDS

When establishing the system for managing the details of all arisings, movement and treatment of construction and demolition waste in the CDWMP, the use of electronic tools should be considered to provide for convenient recording of information in a useful format such as "Smart – waste".

The Contractor will be required to arrange for full details of all arisings, movements and construction and demolition waste to be recorded during all stages of the proposed development. Each consignment of construction and demolition waste removed from the site will be documented in the form of a Waste Movement Record form, which will ensure full traceability of the material to its final destination. Separate record forms will be completed with respect to each waste transfer that takes place. The Contractor will also receive printed documents/records from waste disposal companies employed, quantifying the exact amount of waste material removed from site. The sheet from the disposal company also identifies how much material went to landfill and how much went for recycling. All such records will be retained in a designated location and made available for auditing of the CDWMP.

9. SUMMARY OF THE CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT PLAN

- Waste will inevitably be generated during the construction and demolition phase of the proposed development at Parkmore Industrial Estate. It is intended that all steel and concrete will be imported for use within the project area.
- Other than spoil material from excavations, waste arisings during the construction phase will be minimised by the purchasing manager, who will time the ordering of materials to reduce the likelihood of over-purchase or damage during storage. Construction and demolition waste fractions will be segregated and stored on-site in designated areas or containers in the waste storage area prior to transport by licensed hauliers to facilities for segregation recycling and disposal.

- A WMC will be appointed to ensure that the CDWMP is followed. Training will be given to all staff so that they are aware of the CDWMP and know their responsibilities.
- Records will be kept to trace the inputs and outputs of the construction works at the site. These records will be made available to the relevant local authorities and the EPA should it be required.
- The design and implementation of the CDWMP, in conjunction with the EOP for the proposed development, will provide for the optimum planning/management and handling of waste generated by the project and will ensure that there will be no worse than a neutral or imperceptible impact from waste management practices during construction.
- The contractor appointed to undertake the construction of the proposed development at the Parkmore site will develop the CDWMP based on their detailed plans, the requirements of this outline CDWMP, the requirements of the planning permission, and any commitments given as part of the project approval process and the Employer's requirements and specifications for executing the proposed development.

APPENDIX B
SPECIFIC CONTRACTUAL RESTRICTIONS

CONTROL OF NOISE AND VIBRATION

1 Noise

1.1 General:

The Contractor shall implement specific noise abatement measures and comply with the recommendations of BS 5228: Parts 1 and 2 and the European Communities (Noise Emission by Equipment for Use Outdoors) Regulations, 2001, including:

- No Plant used on site will be permitted to cause an ongoing public nuisance;
- The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by site operations;
- All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order;
- 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 at night will be surrounded by an acoustics enclosure or portable screen to the approval of the Employer's Representative, which shall restrict the noise level to not less than 5dB(A) below the levels quoted in Table 1/9/1. "Night" is defined in Paragraph 1.3.
- During the completion of the works the Contractor shall ensure compliance with the limits detailed in Table 1/9/1 using methods outlined in British Standard BS 5228 – 1: 2009: Code of practice for noise and vibration control on construction and open sites - Noise

1.2 The normal working hours within the Site [excluding existing public roads], shall be Monday to Friday between 07.00 hours and 19.00 hours and Saturday between 08:00 and 18.00 hours, with no working on Sundays and Public Holidays.

1.3 "Night" is defined as 22:00 – 07:00 Monday to Friday and 22:00 – 08:00 Saturday, Sunday and Public Holidays.

1.4 The noise levels (see Note (i) below) in Schedule 1/9/1 for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.

1.5 The ambient noise level, L_{Aeq} (see Note (ii) below), from all sources measured 2.0m above the ground at noise control stations (the Contractor shall provide for a minimum 8 No. Noise Monitoring Stations to be in operation at any one time) shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3dB(A) the existing ambient noise level, L_{Aeq} at the control station measured over the same period, whichever level is greater. The maximum sound level at any noise control station shall not exceed the level given in the Schedule.

1.6 The Contractor shall employ the best practical means to minimise noise produced by his operations including plant maintenance, and shall comply with the recommendations in BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.

1.7 All vehicles and mechanical plant used on the works shall be fitted with effective exhaust silencers and shall be maintained in good and efficient working order for the duration of the works in compliance with BS 5228. The Contractor shall remove from the works any item of plant, which in the opinion of the Employer's Representative is ineffectively silenced. All compressors shall be "sound reduced" models fitted with properly lined and sealed acoustic covers and shall be kept closed whenever the machines are in use. Any ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers. Pumps and mechanical static plant shall be enclosed by acoustic sheds or screens where directed by the Employer's Representative.

1.8 Any plant such as generators and pumps which is required to work outside the normal working hours shall be surrounded by an acoustic enclosure to the approval of the Employer's Representative which shall restrict the noise level to not less than 5dB(A) below the levels quoted in Table 1/9/1.

1.9 The Contractor shall organise his operations with regard to the positioning of plant and the location of haul routes etc. so that it minimises construction noise to adjacent properties.

1.10 The use of explosives is not permitted.

Table 1/9/1: Schedule of Noise Levels

Schedule		**Total Noise Levels at Control Stations**		
Period	**Hours**	**Ambient Noise level, L_{Aeq} measured at Control Station dB(A)**	**Period of Hours over which L_{Aeq} is applicable**	**Maximum Sound Level (see Note (iv) below measured at Control Station: dB(A)**
Monday to Friday	0700 – 1900	70	1	80
Monday to Friday	1900 – 2200	60	1	65
Saturdays	0800 – 1730	65	1	75
Sundays and Public Holidays (when permitted)	0900 – 1730	60	1	65
All unattended plant outside normal working hours	1900 – 2200	60	1	65
All other Times (when permitted)		50	1	55

Notes:

1. Noise levels relate to free field conditions. Where noise control stations are located 1 metre from façades of buildings, the permitted noise levels can be increased by 3dB(A).
2. The ambient noise level, L_{Aeq}, at a specific location is the total L_{Aeq} from all the noise sources in the vicinity over the specified period.
3. The existing ambient noise level, L_{Aeq}, at a specific location is the total L_{Aeq} from all the noise sources in the vicinity over the specified period prior to the commencement of the Works.
4. Maximum sound level is the highest value indicated on the sound level meter which meets the requirements of IS EN 61672.

1.11 Prior to commencement of any construction works on site, the Contractor shall ensure that an Environmental Operating Plan shall be drawn up for implementation on site. The Environmental Operating Plan shall provide, inter alia, for:

A. Definition of locations of noise and vibration monitoring equipment;

B. The provision of appropriate acoustic barriers, where the Contractor deems they will be required to comply with these requirements.

C. The use of best available technology (BAT) to eliminate and control tonal and impulsive noise components and to reduce the noise impact to as low as is reasonably practicable.

D. A limit on the duration of construction hours for noise generating works in proximity to dwellings.

E. A schedule of enhanced mitigation measures to be taken in the potential event of noise monitoring and vibration levels exceeding the permissible levels set out in Tables 1/9/1, 1/9/2 and 1/9/3.

2 Vibration

2.1 Vibration generated by the Contractor's activities shall not adversely affect the structural and serviceability performance of any building or structure outside the boundaries of the site. In addition, the maximum permitted peak particle velocity generated by the construction of the Works shall not exceed the peak particle velocities at locations described and for the frequencies given in Tables 1/9/2 and 1/9/3 below.

Table 1/9/2: Limits for Intermittent Vibration

Structure Type	Max PPV (mm/sec) – Intermittent Vibration		
	Frequency <10 Hz	Frequency 10 – 50 Hz	Frequency 50 – 100 Hz
Residential Properties and similar Structures adjacent masonry structures (unoccupied)	5	10	15
Residential Properties (occupied)	4	8.5	10
Steel and Reinforced Concrete Structures	15	30	40
Robust Underground service	15	30	60
Elderly & Dilapidated Services	10	20	40

Table 1/9/3: Limits for Continuous Vibration

Structure Type	Max PPV (mm/sec) – Continuous Vibration		
	Frequency <10 Hz	Frequency 10 – 50 Hz	Frequency 50 – 100 Hz
Residential Properties and similar Structures adjacent masonry structures (unoccupied)	2.5	5	7.5
Residential Properties (occupied)	2.0	4.5	5.0
Steel and Reinforced Concrete Structures	7.5	15	20
Robust Underground services	7.5	15	30
Elderly & Dilapidated Services	5.0	10	20

2.2 Groundborne vibrations shall not be permitted at sites of freshly placed concrete, i.e. concrete less than 48 hours old.

2.3 The Contractor shall employ the best practical means to minimise vibration produced by his operations, including plant maintenance, and shall comply with the recommendations in BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.

2.4 To ensure compliance with the specified vibration limit, monitoring shall be undertaken by the Contractor using digital seismographs as described in paragraph 2.6 of this Appendix. Such monitoring shall include locations outside the limits of the Site. The Contractor shall provide for at least 8 No. separate vibration monitoring stations to be in operation at any one time – see also Paragraph 1.11 above.

2.5 The Contractor shall monitor ground vibrations at the directed locations. Each vibrograph shall be certified as being in proper working order and shall unless otherwise approved, record vibrations in three directions simultaneously with a print-out showing the amplitude and frequency of the vibrations.

2.6 The digital seismographs shall meet the following minimum specification:

(i) Minimum sampling rate 1000 samples/second/channel;

(ii) Capable of recording Peak Particle Velocity (Directly), Peak Acceleration (Calculated), Peak Displacement (Calculated), Frequency at the Peak Velocity (Calculated);

(iii) Dual Mode instrument having (a) Self Triggering Mode and (b) Continuous Monitoring Mode;

(iv) Transducer - 3 orthogonally mounted transducers on one mounting unit

(v) Frequency Range - 4.5 to 200Hz;

(vi) Minimum Resolution - 0.05mm/second, velocity;

(vii) Range - 0 to 100mm/second, velocity;

(viii) Record of Events - hard copy printout and storage on solid state memory or disc for subsequent printout; and

(ix) Power – 120 volts mains for continuous unattended operation on construction site plus internal battery with minimum of 24 hours capacity.

3 Property Condition Surveys

3.1 Structures and properties that require condition surveys (dilapidation surveys) are identified in the table below. Pre-construction surveys are to be completed and reports submitted to the Engineer 14 days prior to undertaking any Works within 20m of the properties in question. Post-execution condition surveys shall be undertaken in accordance with the requirements of Clause 136.7 of the NRA Specification for Roadworks.

Table 1/9/4 Condition Survey Requirements

Number	Description	Location
TBC	TBC	

ENVIRONMENTAL MANAGEMENT

1. The Contractor shall establish and implement, during the execution and completion of the Works, an Environmental Operating Plan consistent with and analogous to the NRA "Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan".

2. The Environmental Operating Plan shall be structured to differentiate between and address separately all of the following:

(1) short term impacts of construction activities

(2) required mitigation measures that relate to the execution and completion or operation of the Works

(3) any other commitments made in respect of the execution and completion of the Works procedures

(4) processes and resources provided in order to avoid wherever possible environmental accidents and pollution, to encourage reduced consumption of resources and

(5) processes and resources provided to restrict the production of waste and to promote good relationships with the relevant Authorities, and Statutory Undertakers.

3. The Environmental Operating Plan shall include site-specific method statements for all Works activities where there shall be or may be a risk of environmental damage, which:

(i) shall show how the proposed methods of construction shall reduce impacts and how contingency plans and emergency procedures shall limit damage caused by accidents, spillages or other unforeseen events and

(ii) shall ensure that such method statements and the like shall include notification procedures for the relevant Authorities and Statutory Undertakers.

4. The Contractor shall appoint a site Environmental Manager to develop, implement and maintain the Environmental Operating Plan. The Environmental Manager should possess sufficient training, experience and knowledge appropriate to the nature of the task to be undertaken for completion of the Works.

5. The Contractor shall submit to the Engineer details of the Environmental Operating Plan, method statements and a Waste Management Plan prior to the commencement of the Works.

6. All construction and operations shall be carried out in accordance with the Control of Water Pollution from Construction Sites; Guidance for Consultants and Contractors (SP156) (CIRIA, 2002).

7. Soil storage areas will be sited away from drains and appropriate measures put in place to ensure containment of run-off and leechate. The storage of oils, hydraulic fluids, etc shall be undertaken in accordance with current best practice for oil storage (Enterprise Ireland, BPGCS005).

8. 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 codes of practice.

9. Throughout all stages of the construction phase of the project, the contractor shall ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the requirement to avoid pollution of all types;

10. Foul drainage from site compound etc. will be discharged to the existing foul sewerage network, subject to the prior approval of South Dublin County Council.

AIR AND DUST

Public health and environmental protection measures shall be put in place to mitigate the adverse impacts that construction operations may have due to the following:

- Air pollution though the emission of hazardous particulates, fibres and gases;
- Transfer of contaminants off-site due to inadequate vehicle decontamination or sheeting of vehicles;
- Odours.

1.1. The following is a non exhaustive list of measures shall be implemented by the Contractor during the works to mitigate the effects of the above impacts:

- The use of fine water sprays, wheel washing facilities, 'tumble' wheel cleaners and road sweepers
- Temporary containment of excavation, materials handling, and deposition area
- Monitoring
- Temporary covering of exposed surfaces
- Careful selection and operation of plant and equipment (e.g. sheeting of vehicles, control over vehicle speeds on-site)
- Site zoning
- Vehicle decontamination measures
- Temporary covers
- Dust control on operational areas