PUNCH
consulting engineers

Estuary Way, St. Michael's Drive, Mahon, Cork City

Outline Construction Environmental Management Plan

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Document Control

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1.0 Introduction

1.1 Background

PUNCH Consulting Engineers have been appointed by Cork City Council to prepare this Outline Construction Environmental Management Plan (OCEMP) for a proposed development located on St. Michael's Drive, Mahon, Cork City.

The principal objective of the OCEMP is to avoid, minimise and control adverse environmental impacts associated with the construction of the proposed residential development. It is intended that this OCEMP will be used to communicate key environmental obligations that apply to all contractor organisations, their sub-contractors and employees while carrying out any form of construction activity on the site.

The OCEMP will then form part of the main construction works contract. The contractor will be required to take account of the contents, methods AND requirements contained within the various sections of this OCEMP as part of their contractual responsibilities and will also be required to update the document from an 'Outline' CEMP to a CEMP taking account of all project-specific information. The CEMP is considered a 'live' document and as such will be reviewed on a regular basis. Updates to the plan may be necessary due to changes in environmental management practices and/or contractors. The procedures outlined in the OCEMP will however be audited regularly throughout the construction phase to ensure compliance with the key objectives of the plan.

This Outline CEMP will be developed further and/or amended where necessary to take account of site-specific requirements and any information which may be available arising from additional consultations, site surveys or other relevant information sources. It will be developed further during the planning process, and it is noted that this Outline CEMP will be updated to take into account any mitigation measures which arise as a result of ecological surveys yet to be undertaken at the site. An outline construction sequencing, phasing and site compound spatial layout will be progressed to inform this document further.

1.2 Nature of the Proposed Development

The proposed development consists of the provision of 38no. single storey semidetached modular units, including: 34no. 2 bed 4-person units, 2no. 2 bed 3-person units, and 2no. communal/office space units, as well as all associated site development, landscape and boundary works, including: 12no. car parking spaces, 2no. disabled parking space, 2no. set-down space, communal open space (c. 780sqm), public open space (c. 1078sqm), relocation of existing bus stop to allow for site entrance and 1no. ESB unit substation. Civil works to be carried out include:

- Bulk excavation works and removal of excavation arisings from the site;
- Construction of new storm and foul drainage systems including two soakaways;
- Construction of water supply infrastructure and other utilities;
- Construction of roads, footpaths and parking areas;
- Construction of new building structures for the proposed modular units.

It is estimated that the site preparation, and civil and structural construction works will last between 4 and 6 months. It is estimated that at its peak, there may be up to 50 personnel working at the site on a given day. Locations of construction compounds and off-site staff and visitor parking during construction will be agreed with Cork City Council but will be located on site.

The location of the site is shown in Figure 1-1 below, with an extract of the architect's layout shown in Figure 1-2.

Figure 1-1: Site Location Plan

Figure 1-2: Proposed Site Layout

2.0 Responsibilities

2.1 Key Contacts and Roles

The detailed CEMP will need to confirm and add to the following minimum information:

Description	Name	Address	Name and Contact
Developer/Applicant			
Contract Manager			
Site Manager			
Environmental Compliance Officer			
Consulting Engineer			

The key responsibilities of those persons listed in Table 1 above are as follows:

Description	Responsibility
Developer/Applicant	To provide that all planning condition requirements are implemented in full
Contract Manager	To be responsible for development of the CEMP in line with planning condition requirements and the contents of this outline plan
Site Manager	To advise site personnel on all requirements at the site and areas where improvements may be made on-site and off-site
Environmental Compliance Officer	To be responsible for undertaking environmental audits to check compliance with the environmental mitigation measures set out in the CEMP
Consulting Engineer	To be responsible for implementation of detailed design including design compliance with all planning conditions

The contractor appointed to carry out the construction works shall produce detailed method statements and risks assessments based on the outline method of works, procedures and environmental requirements set out in this OCEMP. The CEMP will form part of the site induction for all employees who shall be required to comply with the requirements set out in the plan.

2.2 Relevant Legislation and Reference Documents

It is proposed that all works will be carried out using best practice and in conformance with the requirements of the relevant regulatory authorities and legislation. A non-exhaustive summary of key legislative documents and guidance is provided below.

2.2.1 Legislation

Current legislation as well as published guidance documents must be taken into account in the production of the final CEMP plan. Legislation must cover all relevant areas, including water pollution, fisheries protection, wildlife species protection, waste and noise.

2.2.2 Key Guidance

The Environmental Protection Agency (EPA) has produced Pollution Prevention Guidelines. Some of these are of particular note with regard to the drafting of this OCEMP which include:

- IPC Guidance Note - Guidance Note on Storage and Transfer of Materials for Scheduled Activities
- National Hazardous Waste Management Plan 2008-2012 (EPA 2008)

Key Guidance pertinent to this OCEMP from other bodies include:

- Best Practice Guide BPGCS005 - Oil Storage Guidelines
- Construction and Demolition Waste Management - A handbook for Contractors & Site Managers
- Best Practice Guidelines for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects 2021 – Environmental Protection Agency (EPA)
- Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Waters, Inland Fisheries Ireland
- Use Chemicals Safely, Health and Safety Authority (HSA)
- Risk Assessment of Chemical Hazards (HSA)

3.0 Outline Works Description

The construction works will involve an indicative sequence of works, as described in short below. The Contractor will outline works which impact public spaces within the Construction Management Plan that shall be subject to submission and agreement with CCC.

3.1 Hoarding, Site Set-up and Formation of Site Access/Egress

The site area will be enclosed with hoarding details of which are to be agreed with CCC. Hoarding panels will be maintained and kept clean for the duration of the works. This will involve erecting hoarding around the proposed site perimeter in line with the finished development extents.

The available site footprint will enable the Contractor to set up the site compound within the site boundary.

The Contractor will be responsible for the security of the site. The Contractor will be required to:

- Operate a Site Induction Process for all site staff;
- Ensure all site staff shall have current 'Safe Pass' cards and appropriate PPE;
- Install adequate site hoarding to the site boundary;
- Maintain site security at all times;
- Install access security in the form of turn-styles and gates for staff;
- Separate public pedestrian access from construction vehicular traffic.

3.2 Site Clearance and Demolition

The location is a brownfield site and will require site clearance. The demolition of any existing buildings will be progressed in tandem with the commencement of the construction works or as part of an enabling works package.

3.3 Construction Sequence of Development

The construction methodology and programme will be dictated by the Contractor.

4.0 Environmental Impacts

The following is intended as a framework of anticipated mitigation measures in order to mitigate potential construction impacts identified. The framework is intended to form the basis of a future CEMP including detailed action plans and method statements once a contractor is appointed. As the site is located adjacent existing commercial and residential developments, the risks from noise and dust to those living in the area need to be carefully managed.
The main environmental impacts which have been identified as relevant to this project and which are covered by this OCEMP are as follows:

- Water pollution arising from silt/sediment from construction works;
- Water pollution arising from cement and concrete;
- Water pollution arising from untreated wastewater;
- Soil/Water pollution arising from solid waste disposal;
- Soil/Water/Air pollution arising from hydrocarbon emissions;
- Air/Noise pollution and vibration impacts arising from construction related traffic and other activities;
- Impacts on the road network in the local area due to vehicles involved in the construction process;
- Impacts from any de-watering activities during underground civil infrastructure works;
- Air pollution arising from dust generated by construction activities.

The following sections of this plan describe each of the above environmental impacts identified and the proposed measures to be adopted for eliminating/mitigating the associated impacts.

5.0 Environmental Considerations for Civil/Structural Elements

5.1 Demolition and Site Clearance

The deconstruction of the existing container buildings will be carried out using a systematic demolition method and sequence. Following the demolition, temporary works will be installed to ensure the site is safe. Subsequent site clearance will be conducted to remove any remaining debris and materials, ensuring the site is left clean and ready for the next phase of development.

Potential Environmental Impacts:

- Noise: Temporary increased noise levels at nearby residential and commercial properties due to HGV movements and demolition activities.
- Vibration: Potential vibration impacts on local buildings caused by the demolition process.
- Dust: Windblown dust generated during demolition operations.
- Asbestos: Risk of asbestos release during demolition.
- Site Clearance: Additional noise and dust generated during the removal of debris and materials.

5.2 Construction of foundations for structures

It is envisaged that the units will be constructed on reinforced concrete strip or pad foundations founded on good bearing stratum.

5.3 Construction of soakaways

A new surface water sewer network shall be provided as part of the proposed works. All surface water run-off will be collected by a gravity pipe network and discharged to two separate soakaways. The

soakaways will provide the required level of attenuation storage within the voids of the soakpit. The base and sides of the soakpit will be lined. It is proposed to discharge surface water via infiltration. Infiltration is considered an effective means of controlling runoff and supporting groundwater recharge. On site infiltration tests will be procured as part of the site investigation and the size of the soakpit will be amended as necessary to reflect the BRE 365 test results.

5.4 Storage of Excavated Material (Construction of Dwellings and Roads)

A site excavation plan will be undertaken by the contractor to manage the removal of excavated material from site in a timely, rolling manner. This will be reviewed in detail as part of the construction traffic management plan.

6.0 Surface Water and Wastewater Management

6.1 Site Facilities during Construction

A construction sequencing and outline construction site plan will be developed to establish the areas available for set down, storage and site facilities. A location for the establishment of secondary site facilities, including parking, will also be defined. The site facilities which will be provided will include site offices along with canteen, toilets and drying room for all staff/workers. Proposals for the disposal of waste produced at staff toilet facilities will be developed by the contractor and submitted to CCC/IW for approval prior to construction of the facilities.

6.2 Management of Surface Water on Site

Any surface water or pumped ground water generated during the construction phase of the project will be treated on site using a settlement tank to remove any sediment prior to discharge.

This settlement tank will be sized in accordance with CIRIA C532, 'Control of water pollution from construction sites – Guidance for consultants and contractors'. The tank will be fully and securely sealed, and will be inspected and de-silted regularly.

Flows treated in the settlement tank will discharge to the nearest surface water drainage connection. Discharge water from the settlement tank will be inspected on a daily basis and if it is found to be silted, the flow will be stopped immediately and appropriate remedial works will be carried out.

Environmental Requirements

- Silt traps will be placed as close as possible to the construction works while allowing for sufficient space for maintenance and clearance of silt and debris.
- A surface water settlement tank will be installed to remove suspended solids from flows prior to discharge;
- To ensure that there will be no contamination of surface water, any excess excavated material will be immediately removed and not stored on the site;
- The contractor will undertake an inspection and maintenance program during construction phase to ensure compliance with discharge limits.
- The short-term storage and removal/disposal of excavated material will be planned and managed such that the risk of pollution from these activities is minimized.
- An emergency-operating plan will be established to deal with incidents or accidents during construction that may give rise to pollution within any watercourses. This will include means of containment in the event of accidental spillage of hydrocarbons or other pollutants.
- Through all stages of the construction phase the contractor will ensure that good housekeeping is maintained at all times and that all site personnel are made aware of the importance of the adjoining environments and the requirement to avoid pollution of all types.
- Road cleaning will take place to ensure that any mud and other wastes which may be tracked onto public roads do not result in a negative impact to road users.

6.3 Dewatering

Site investigations which will be scoped as part of detailed design stage will determine the site conditions including overburden, depth to rock and ground water levels, including ground water monitoring. The results of these investigations will determine the requirements for dewatering to construct any deep elements, such as the soakaways tanks, deep drainage and sewer lines. It is anticipated that dewatering will not be required but mitigation measures will be designed to alleviate any negative impact on the surrounding environs. There will be detailed method statements and monitoring procedures developed from the results of the investigations.

7.0 Waste Management

7.1 Waste Management Control Policy

The following legislation and guidance documents are of relevance to the noise and vibration of the site.

Legislation

- Directive 2008/98/EC on waste (Waste Framework Directive).
- The Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, 2010 amended.
- Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of Annex II to Directive 1999/31/EC.
- European Waste Catalogue - Council Decision 94/3/EC (as per Council Directive 75/442/EC).
- Hazardous Waste List - Council Decision 94/904/EC (as per Council Directive 91/689/EEC).
- Waste Management Act 1996 (S.I. No. 10 of 1996) as amended by the Waste Management (Amendment) Act 2001.
- Litter Pollution Act 1997 and Regulations.

Guidance documents

- EPA, Waste Classification, List of Waste & Determining if Waste is Hazardous or Non-hazardous, June 2015.
- Southern Region Waste Management Plan 2021.
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects 2021, Environmental Protection Agency (EPA).
- Environmental Good Practice on site, CIRIA C692.
- Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan, National Roads Authority.

The management of construction and demolition waste should reflect the waste management hierarchy, with waste prevention and minimisation being the first priority succeeded by reuse and recycling.

During demolition, site clearance and construction works, there are numerous opportunities for the beneficial reuse and recycling of waste 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.

7.1.1 Waste Management Plan

The Contractor shall be responsible for developing the Waste Management Plan related to its construction activities. The Plan shall apply to all works carried out by the Contractor and any subcontractors under its control. In preparing the plan, the Contractor shall consider any measures set out any planning consent document, the relevant legislation, and industry best.

Certain uncontaminated materials (soil) excavated from the site during the works may be reused in the works, and therefore would not require disposal/recovery as waste. In developing the WMP, the Contractor shall consider the reuse of materials where practicable, where permitted under the relevant waste legislation, and where the material meets the engineering requirements.

7.1.2 Waste Management Strategy

The Contractor shall comply with the objectives of the Southern Region Waste Management Plan 2021. The Contractor shall establish a system for the management of wastes in accordance with the Waste

Management Hierarchy. This hierarchy outlines that waste prevention and minimisation are the priority in managing wastes, followed by waste reuse and recycling. Disposal of waste shall only be considered as a last resort.

- Prevention.
- Minimisation.
- Reuse.
- Recycling.
- Disposal.

In particular, the Contractor will incorporate the reuse and recycling target of 70% for construction and demolition waste (excluding soil and stones) contained within the Southern Region Waste Management Plan.

7.1.3 Waste Identification & Classification

The Contractor shall establish a procedure to identify and classify all waste arising at the site in accordance with the European Waste Catalogue (EWC) Code. The Contractor shall ensure that the waste materials generated during the works are clearly identified as either hazardous or non-hazardous wastes, with reference to the guidance from the Environmental Protection Agency (Paper Tool of the Procedure for the Identification of the Hazardous Components of Waste) where required and shall establish waste storage areas for the different types of waste that may arise.

For each waste stream identified by the Contractor, and for each additional waste stream that may arise during the works, the Contractor shall identify the following:

- The appropriate EWC Code
- A suitable Waste Collection Contractor in possession of a valid Waste Collection Permit for the collection of the waste within Limerick city.
- The waste recovery or disposal site, including the transfer station where the waste may be transferred to upon leaving the site in possession of a valid Waste Facility Permit or Waste License, as appropriate.
- The recovery or disposal method for the waste.

Only Contractors in possession of a valid Waste Collection Permit shall collect wastes from the site. The Contractor responsible for the waste shall ensure that the Waste Collection Contractor:

- Is permitted to collect the particular waste.
- Is permitted to collect waste within Cork City.
- Uses a waste collection vehicle identified on the Waste Collection Permit.
- Transfers the waste to a waste facility identified on the Waste Collection Permit.

7.2 Quantities of Waste

Waste which will be generated by the demolition of the existing Áras Phádraig building, excavation works for the substructure, public plaza and underground civil infrastructure, which will comprise of stone and existing subsoil , will be quantified at detailed design stage and incorporated into the CEMP.

7.3 Prevention of Waste

The primary effort therefore should be to engage in waste prevention and reduce the amount of waste generated in the first place i.e. minimise the resources needed to do the job.

Prevention is financially advantageous as it reduces the purchase of construction materials and obviates the need to remove wastes from site. It is important to emphasise the potential for certain purchasing procedures to contribute to a reduction in excessive material wastage on site. Examples include:

- Ensuring tasks and activities are thoroughly planned well in advance of work being done to help accurately quantify materials required so materials are ordered on an "as needed" basis to prevent over supply to site;
- Purchasing coverings, panelling or other materials in shape, dimensions and form that minimises the creation of excessive scrap waste on site;
- Ensuring correct storage and handling of construction materials to minimise generation of damaged materials/ waste e.g. keeping deliveries packaged until they are ready to be used;
- Preventing fuel and oil spills through good housekeeping practices and making readily available emergency clean up spill kits to deal with any spills that arise thereby eliminating hydrocarbon contamination and generation of additional waste;
- Ensuring correct sequencing of operations; and
- Assigning individual responsibility (through appropriate contractual arrangements) to sub-contractors for the purchase of raw materials and for the management of wastes arising from their activities, thereby ensuring that available resources are not expended in an extravagant manner at the expense of the main contractor.

7.4 Reuse of Waste

Material that is generated should be reused on site or salvaged for subsequent reuse to the greatest extent possible and disposal should only be considered as a last resort. Initiatives should be put in place to maximise the efficient use/ reuse of materials.

7.5 Recycling of Waste

There are a number of established markets available for the beneficial use of C&D waste:

- Waste timber can be:
    - recycled as shuttering or hoarding, or
    - sent for reprocessing as medium density fibreboard;
- Waste concrete can be utilised as fill material for roads or in the manufacture of new concrete when arising at source;
- Waste steel and other metals can be processed for other uses at metal recycling centres and
- In addition, the technology for the segregation and recovery of stone, for example, is well established, readily accessible and there is a large reuse market for aggregates as fill for roads and other construction projects.

7.6 Overall Management of Construction and Demolition Waste

Waste minimisation, reuse and recycling can best be managed operationally by nominating a "Construction and Demolition Waste Manager" to take responsibility for all aspects of waste management at the different stages of the Project.

This C&D Waste Manager may well be a number of different individuals over the lifecycle of the Project, but in general is intended to be a reliable person chosen from within the Contracting Team, who is technically competent and appropriately trained, who takes the responsibility to ensure that the objectives and measures within the Project Waste Management Plan are delivered and who is assigned the requisite authority to secure achievement of this purpose.

Specifically, the function of the C&D Waste Manager will be to communicate effectively with colleagues in relation to the aims and objectives for waste management on the Project. The primary responsibility for delivery of the objectives of the Waste Management Plan will fall upon the C&D Waste Manager designated at the demolition/ construction stage. A key objective for the C&D Waste Manager should be

to maintain accurate records on the quantities of waste/ surpluses arising and the real cost (including purchase) associated with waste generation and management.

The preparation, application and documentation of a Project Waste Management Plan should enable all parties - including contractors, designers and competent authorities - to learn from the systematic implementation and assessment of best practice, particularly through the recording of summary information on performance outcomes.

In general:

- Regular shaped skips measuring 6m in length by 2.5m in width by 1.8m in height, will be used for the duration of the construction works. All skips will be situated within the designated site compound area with ample space around the skips to facilitate thorough segregation of the different waste materials.

- Skips will be available for each of the following waste types and will be labelled accordingly: wood, metal, brick/ rubble, canteen waste, plasterboard, paper and cardboard, other general waste and special bins for any hazardous wastes as required.

- Throughout the construction zone, covered labelled wheelie bins will be placed at designated waste depots. These bins will be taken and used by the operatives/ sub-contractors and returned to the depots after use.

- The waste segregation area banksman will co-ordinate the movement of skips to and from the construction zone. The banksman will also co-ordinate the scheduling of the approved waste collector to transport waste to the relevant permitted/ licensed waste facility.

7.7 Control of Fuels and Lubricants

7.7.1 General Site Procedures

In order to provide fuel to the relevant items of plant on site, a certified double skinned metal fuel tank with integrated pump, delivery hose, meter, filter and locking mechanism will be situated in a secure area on the construction site. It will be situated within a bund. This tank will be certified for lifting when full. Emergency clean up spill kits will be readily available in the event of a fuel spill. A hazardous bin will also be available to contain any spent soak pads.

New metal jerry cans with proper pouring nozzles will be used to move fuel around the site for the purposes of refuelling items of small plant on site.

Drip trays will be used under items of small plant at all times. Any waste oils etc. contained in the drip trays or the bunded area will be emptied into a waste oil drum which will be stored within the bund.

Metal jerry cans and any other items of fuel containers will be stored in certified metal bunded cabinets. Any gas bottles will be stored in a caged area at a secure location on the site. All will be properly secured at point of work.

All refuelling activities on site will be subject to a permitting system. It will be the responsibility of the Site Manager to ensure that the permitting system is adhered to. The Environmental Health and Safety (EHS) officer will be responsible for issuing each permit. The permitting procedures will require key information to be gathered and recorded on the Permit to Refuel form prior to permit being issued.

8.0 Traffic Management

8.1 Traffic Management Procedures

It is proposed that all site compound facilities will be located on site. Deliveries of materials and equipment will be coordinated on a Just-In-Time basis. All deliveries will be co-ordinated with the Contractor prior to arrival at the compound. All drivers will be required to report to site office prior to discharge/set down of materials. Please refer also to Outline Construction Traffic Management Plan prepared by PUNCH which accompanies this submission. The Contractor will be required to assist construction traffic with safely entering and exiting the site compound from the public road. The Contractor will be responsible for ensuring that there is no conflict between road users and vehicles entering/exiting the site. Signage will be placed either side of the site entrance to alert road users. All construction traffic routes will be agreed with Cork City Council as part of the Construction Traffic Management Plan.

It is predicted that there will be a maximum of 50 personnel on site during peak construction activity. Car parking spaces, storage and all activity is to be limited to designated areas on site to ensure minimum impact on surrounding lands

The volume of HGV movements per day will vary according to the different stages of construction. Peak HGV movements will be associated with removal of waste arising from excavations. A summary of the estimated HGV trips per day to the site for various elements of the works is provided below:

- Demolition material removal (maximum 10 HGV trips to site and 10 from site per day)
- Bulk excavation material removal (maximum 15 HGV trips to site and 15 from site per day)
- Concrete pours (maximum 10 HGV trips to site and 10 from site per day)
- Delivery of structural elements (maximum 10 HGV trips to site and 10 from site per day)

A Construction Traffic Management Plan will be required for the project, a draft outline of which will be prepared as the sequencing of works becomes known. The appointed PSCS (typically the appointed contractor) shall prepare a fully detailed Construction Traffic Management Plan in accordance with the Department of Transport Traffic Signs Manual Chapter 8. The Traffic Management Plan shall be co-ordinated by the PSDP. The primary objective in the planning and design is to maximise the safety of the workforce and the travelling public and to keep traffic flowing as freely as possible and keep the impact of the works to a minimum.

The contractor will be required to clean the road network on the approaches to the site on a regular basis, erect appropriate signage and liaise with the Gardaí and Local Authorities. It is envisaged that construction traffic will enter the site via St. Michael's Drive adjacent to the south boundary line of the site.

As such, given the existing traffic volumes on the road, slight traffic impacts on the local road network are anticipated. This will be mitigated as much as practicable by coordinating such trips to be undertaken at off-peak times. Full details of proposed Site Access Routes will be developed further and included in this document as an outline Construction Traffic Management Plan.

8.2 Delivery of construction plant to site

The delivery and removal of all plant will take place outside of peak working hours so as to minimise any impact on traffic on the road.

8.3 Parking Arrangements

Suitable locations for parking and additional staff facilities are currently being investigated, they will be located on site as there is ample space available.

9.0 Air Quality Management

9.1 Emission Sources

There is the potential for a number of emissions to the atmosphere during the demolition and site clearance stage of the project. In particular, activities may generate quantities of dust. Construction vehicles, generators etc., will also give rise to some exhaust emissions.

Considering the existing traffic levels along the adjacent public roads, the likely air quality impact associated with construction traffic will not be significant. Measures will nevertheless be taken to minimise dust and maintain acceptable conditions for nearby residents, workers and other members of the public. This will include regular housekeeping procedures and during site clearance works and may include wheel washing facilities prior to exit onto public road during the earthworks phase of the development. Cleaning of the public roads in the vicinity of the site entrance will take place in the event that any material is deposited on the road.

9.2 Mitigation Measures

A dust minimisation plan will be formulated for the construction phase of the project, as construction activities are likely to generate dust emissions. The potential for dust to be emitted depends on the type of activity being carried out in conjunction with environmental factors including levels of rainfall, wind speeds and wind direction. The potential for impact from dust depends on the distance to potentially sensitive locations and whether the wind can carry the dust to these locations.

As part of the dust minimisation plan and in order to ensure that no dust nuisance occurs for nearby residents, a series of measures will be implemented. Roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface. Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions and all associated run off directed to settlement ponds for treatment prior to discharge to temporary percolation area.

Vehicles delivering material with dust potential both on and off the site shall be enclosed or covered with tarpaulin at all times to ensure no potential for dust emissions.

During the earthworks phase of the project, all vehicles exiting the site shall make use of the wheel washing facility prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site entrance shall be regularly inspected for cleanliness, and cleaned as necessary.

Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

At all times, the procedures put in place will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, satisfactory procedures will be implemented to rectify the problem.

The dust minimisation plan shall be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust through the use of best practise and procedures.

10.0 Noise and Vibration Management

The following legislation and guidance documents are of relevance to the noise and vibration of the site:

Legislation

- Environmental Protection Agency Act 1992 (Noise) Regulations 1994

Guidance documents

Unless otherwise specified, the Contractor shall ensure that all activities associated with the works are carried out in accordance with best practice for the management and control of noise and vibration from construction sites as per:

- The recommendations in British Standards Institution BS 5228: (2009+A1: 2014), 'Code of practice for noise and vibration control on construction and open sites.
- CIRIA guidance document C741 Environmental good practice on site guide'.
- National Roads Authority guidance 'Guidance for the treatment of noise and vibration in National Road Schemes'.

Noise and vibration may arise from a wide variety of sources during construction and to varying degrees during the course of the works, depending upon the stage of construction (i.e. ground-works, demolition, etc).

The Contractor shall identify potential sources of noise and vibration from selected plant and equipment and from activities that will be carried out during the works. This shall also include off-site noise and vibration generation from road traffic directly associated with the works (e g. deliveries to the site, waste transport from the site, etc).

10.1 Noise

The works will include site clearing operations, demolition of existing container structures, grubbing out of redundant services and the construction of the new development and all associated site works.

There is no published Irish guidance relating to the maximum permissible noise levels that may be generated during the construction phase of a project. Local authorities normally control construction activities by imposing limits on the hours of operation and consider at their discretion noise limits. Due to the vicinity of residential areas, noise emissions from the site must be strictly controlled.

In the absence of specific noise limits, appropriate criteria relating to permissible construction noise levels for a development of this scale may be found in the National Roads Authority (NRA) publication Guidelines for the Treatment of Noise and Vibration in National Road Schemes, which indicate the following criteria and hours of operation. The majority of the construction activity is expected to occur during normal working hours.

Table 1: Maximum Permissible Noise Levels at Adjoining Properties during Construction

Schedule		Total Noise Levels at Control Stations		
Period	**Hours**	**Ambient Noise Level, Leq, measured on Site [dB(A)]**	**Period of Hours over which Leq, is applicable.**	**Maximum allowable Sound Level (see note (iv) below) on site [dB(A)]**
Mondays to Fridays	08.00hrs to 19.00hrs	75	1 hour	85
Mondays to Fridays	19.00hrs to 22.00hrs	60	1 hour	65
Saturdays	08.00hrs to 16.30hrs	70	1 hour	80
Sundays and Public Holidays*	09.30hrs to 16.00hrs	60	1 hour	65
All unattended plant outside normal working hours		50	18 hours	55

*Construction activity at these times, other than that required for emergency works, will normally require the explicit permission of the relevant local authority.

Notes:

(i) Noise levels relate to free field conditions. Where noise control stations are located 1 metre from facades of buildings, the permitted noise levels can be increased by 3dB(A).

(ii) The ambient noise level, L_{eq} is the total L_{eq} from all the noise sources in the vicinity over the specified period.

(iii) The existing ambient noise level L_{eq} at a control station is the total L_{eq} from all the noise sources in the vicinity over the specified period prior to the Commencement of the Works.

(iv) Maximum sound level is the highest value indicated on a sound level meter which meets the requirements of BS EN 61672 Type 1 or 2 set to SLOW response, and frequency weighting A.

(v) Throughout the contract, the supervision of the Works will include ensuring compliance with the limits set out in the above table using the methods set out in BS 5228. At all other times the sound level of 48dB(A) L_{eq} (12hr) and a maximum noise level of 53dB(A) at any adjoining property may only be exceeded if the existing ambient noise levels are themselves higher. In such cases the ambient noise level can be exceeded by a maximum of 5 dB(A).

Other noise mitigation measures will be in place to limit increase levels of noise from demolition and construction services, as noted in 10.3 of this report.

10.2 Vibration

Vibration predictions will assist the selection of steps to minimise vibration and other activities where it is not practical to do this at source. Activities for which vibration prediction may be required include, but are not limited to:

- Demolition
- Vibratory compaction
- Dynamic compaction
- Impact breakers
- Piling

There are two varieties of criteria for vibration: those dealing with human comfort and those dealing with cosmetic or structural damage to buildings. In all instances, it is appropriate to consider the magnitude of vibration in terms of Peak Particle Velocity (PPV).

It is acknowledged that humans are particularly sensitive to vibration stimuli and that any perception of vibration may lead to concern. In the case of road traffic, vibration is perceptible at 0.5 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short duration. This guidance is applicable to the daytime only; it is unreasonable to expect people to be tolerant of such activities during the night.

Guidance relevant to acceptable vibration within buildings is contained in the following documents:

- British Standard BS 7385 -2:1993: Evaluation and measurement for vibration in buildings. Guide to damage levels from ground borne vibration, and;
- British Standard BS 5228-2:2009: Code of practice for noise and vibration control on construction and open sites

BS 7385 -2:1993 states that there should typically be no cosmetic damage if transient vibration does not exceed 15 mm/s at low frequencies rising to 20 mm/s at 15 Hz and 50 mm/s at 40 Hz and above. These guidelines relate to relatively modern buildings and should be reduced to 50% or less for more critical buildings.

Due to construction activities being of lighter nature, monitoring by an independent specialist is deemed to be not required. Other vibration mitigation measures will be in place to limit the vibration from demolition and construction services, as noted in 10.3 of this report.

10.3 Noise and Vibration Mitigating Measures

Due to the nature of the activities undertaken on a construction site, there is potential for generation of increased levels of noise. A variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors and generators. The flow of vehicular traffic to and from a construction site is also a potential source of relatively high noise levels.

With regard to construction activities, reference will be made to BS 5228-1:2009: Noise control on construction and open sites, which offers detailed guidance on the control of noise and vibration from demolition and construction activities. In particular, it is proposed that various practices be adopted during construction, including:

- limiting the hours during which site activities likely to create high levels of noise or vibration are permitted;
- establishing channels of communication between the contractor/developer, Local Authority and residents;

- appointing a site representative responsible for matters relating to noise and vibration;
- all site access roads will be kept even, to mitigate the potential for vibration from lorries;

Furthermore, it is envisaged that a variety of practicable noise control measures will be employed. These may include:

- Selection of plant with low inherent potential for generation of noise and/ or vibration;
- Erection of barriers as necessary around noisy processes and items such as generators heavy mechanical plant or high duty compressors;
- Placing of noisy / vibratory plant as far away from sensitive properties as permitted by site constraints and the use of vibration isolated support structures where necessary.

During the site clearance and construction phase of the project there will be some small impact on nearby properties due to noise emissions from site traffic and other activities. However, given that the construction phase of the project is temporary in nature, it is expected that the various noise sources will not be excessively intrusive. Furthermore, the application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum.

It is recommended that vibration from construction activities be limited to a peak value of 5mm/sec. This limit is considered to be a very conservative upper limit and well below the levels that would be likely to cause cosmetic/structural damage to any neighbouring buildings or to cause disturbance for neighbours.

11.0 Indicative On-Site Waste Construction & Demolition Waste Management Plan

11.1 Proposals for Minimisation, Reuse and Recycling of C&D Waste

Construction and demolition waste will arise on the Project mainly from the demolition of the existing structures on site and the construction phase. Demolition and construction waste will be segregated and disposed of at appropriate facilities.

The following are proposals for minimisation, reuse and recycling of C&D waste:

- The Purchasing Manager shall ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.
- Concrete waste will be source segregated.
- Masonry and wood will be source segregated.
- Packaging will be source segregated for recycling or return to suppliers.
- Hazardous wastes will be identified, removed and kept separate from other C&D waste materials in order to avoid further contamination.
- Other C&D waste materials will be collected in receptacles with mixed C&D waste materials, for subsequent separation and disposal at a remote facility.

Where waste material has to be moved off site, it is the intention to engage specialist waste service Contractors, who will possess the requisite authorisations, for the collection and movement of waste off-site, and to bring the material to a facility which currently holds a Waste Licence/ Waste Permit/ Certificate of Registration. Accordingly, it will be necessary to arrange the following waste authorisations specifically for the Project:

Authorisation Type	**Specific Need for Project (Yes/No?)**
Waste Licence	Yes ■ No ☐
Waste Permit	Yes ■ No ☐
Waste Collection Permit	Yes ■ No ☐
Transfrontier Shipment Notification	Yes ☐ No ■
Movement of Hazardous Waste Form	Yes ☐ No ■

Table SF3 Waste Authorisations Necessary for the Scheme
from Appendix 3 of Best Practice Guidelines of Waste Management Plans for C&D Projects

A list of waste collection permit holders to be employed on this project will be submitted to the local authority by the contractor in their Formal Construction and Demolition Waste Management Plan for the Construction Stage.

A list of waste collection permit sites that the waste may be recovered or disposed to on this project will be submitted to the local authority by the contractor in their Formal Construction and Demolition Waste Management Plan for the Construction Stage.

11.2 Assignment of Responsibilities

A Foreman shall be designated as the Responsible Person and have overall responsibility for the implementation of the on-site Waste Management Plan.
The Responsible Person will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan.

At the operational level, a Ganger from the main contractor and appropriate personnel from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Waste Management Plan are performed on an on-going basis.

11.3 Training

Copies of the Waste Management Plan will be made available to all personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions.

Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Waste Management Plan.

Posters will be designed to reinforce the key messages within the Waste Management Plan and will be displayed prominently for the benefit of site staff.

11.4 Waste Auditing

The C&D Waste Manager shall arrange for full details of all arisings, movements and treatment of construction and demolition waste discards to be recorded during the construction stage of the Project. Each consignment of C&D waste taken from the site will be subject to documentation, which will conform with Table SF4 and ensure full traceability of the material to its final destination.

Detail	Particulars
Name of Project of Origin	e.g. New Harbour Motorway
Material being Transported	e.g. Soil, Demolition Concrete, Crushed Asphalt etc.
Quantity of Material	e.g. 20.50 tonnes
Date of Material Movement	e.g. 01/07/2000
Name of Carrier	e.g. Authorised Carriers Ltd.
Destination of Material	e.g. Newtown Residential and Office Development
Proposed Use	e.g. Use as Hardcore in Dwelling Floors

Table SF4 Details to be Included within Transportation Dockets
from Appendix 3 of Best Practice Guidelines of Waste Management Plans for C&D Projects

Details of the inputs of materials to the Construction site and the outputs of wastage arising from the Project will be investigated and recorded in a Waste Audit, which will identify the amount, nature and composition of the waste generated on the site.

The Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste.

The measured waste quantities will be used to quantify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences which can be applied to future projects.

The total cost of C&D Waste management will be measured and will take account of the purchase cost of materials (including imported soil), handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be calculated for the management of a range of C&D Waste materials, using the format shown in Table SF5.

Table SF5 below will be completed and submitted to the Council in full following the appointment of a contractor for the works.

Material	**Estimated Quantities & Costs (tonnes & Euro)**
SOIL	
Quantity of Waste Soil(tonnes)	
Purchase Cost i.e. Import Costs (€)	
Materials Handling Costs (€)	
Material Storage Costs (€)	
Material Transportation Costs (€)	
Revenue from Material Sales (€)	
Material Disposal Costs (€)	
Material Treatment Costs (€)	
Total Waste Soil Management Costs (€)	
Unit Waste Soil Management Costs (€)	

Table SF5 Standard Record Form for Costs of C & D Waste Management
from Appendix 3 of Best Practice Guidelines of Waste Management Plans for C&D Projects

Details of the quantities and types of C&D Waste arising from the Project will be forwarded to the Environmental Protection Agency, local authority, NCDWC etc.

12.0 Conclusions

This report was prepared in accordance with the best practice guidelines and principles for the avoidance, minimisation and control of adverse environmental impacts associated with the proposed development.

This Outline CEMP will be developed further and/or amended where necessary to take account of site-specific requirements and any information which may be available arising from additional consultations, site surveys or other relevant information sources.

It is noted that this Outline CEMP will be updated to take into account any mitigation measures which arise as a result of ecological surveys yet to be undertaken at the site.

The Outline CEMP will form part of the main construction works contract. The contractor will be required to take account of the contents, methods and requirements contained within the various sections of this Outline CEMP as part of their contractual responsibilities. The contractor will be required to complete a detailed demolition waste management plan in addition.