Domestic Violence Refuge and Social Housing, Turner's Cross, Cork

Outline Construction Environmental Management Plan

244110-PUNCH-XX-XX-RP-C-0002

March 2025

Document Control

Document Number: **244110-PUNCH-XX-XX-RP-C-0002**

Status	Revision	Description	Date	Prepared	Checked	Approved
S3	P01	Review and Comment	16/10/2024	D Madden	D Trkulja	C Murphy
A0	C01	Issue for Planning	07/03/2025	D Madden	D Trkulja	C Murphy

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7.3 Contamination of the excavated material is not expected; however, site investigation works are currently ongoing. Should any contamination risks be identified through these investigations, the contractor shall implement appropriate measures. These measures include preventing further contamination by keeping hazardous substances away from excavation areas and following proper

1.0 Introduction

1.1 Background

PUNCH Consulting Engineers have been appointed by Good Shepherd Cork to prepare this Outline Construction Environmental Management Plan (OCEMP) for a proposed housing development located on Evergreen Road, Turner's Cross, Cork. The site location is shown in Figure 1-1 below.

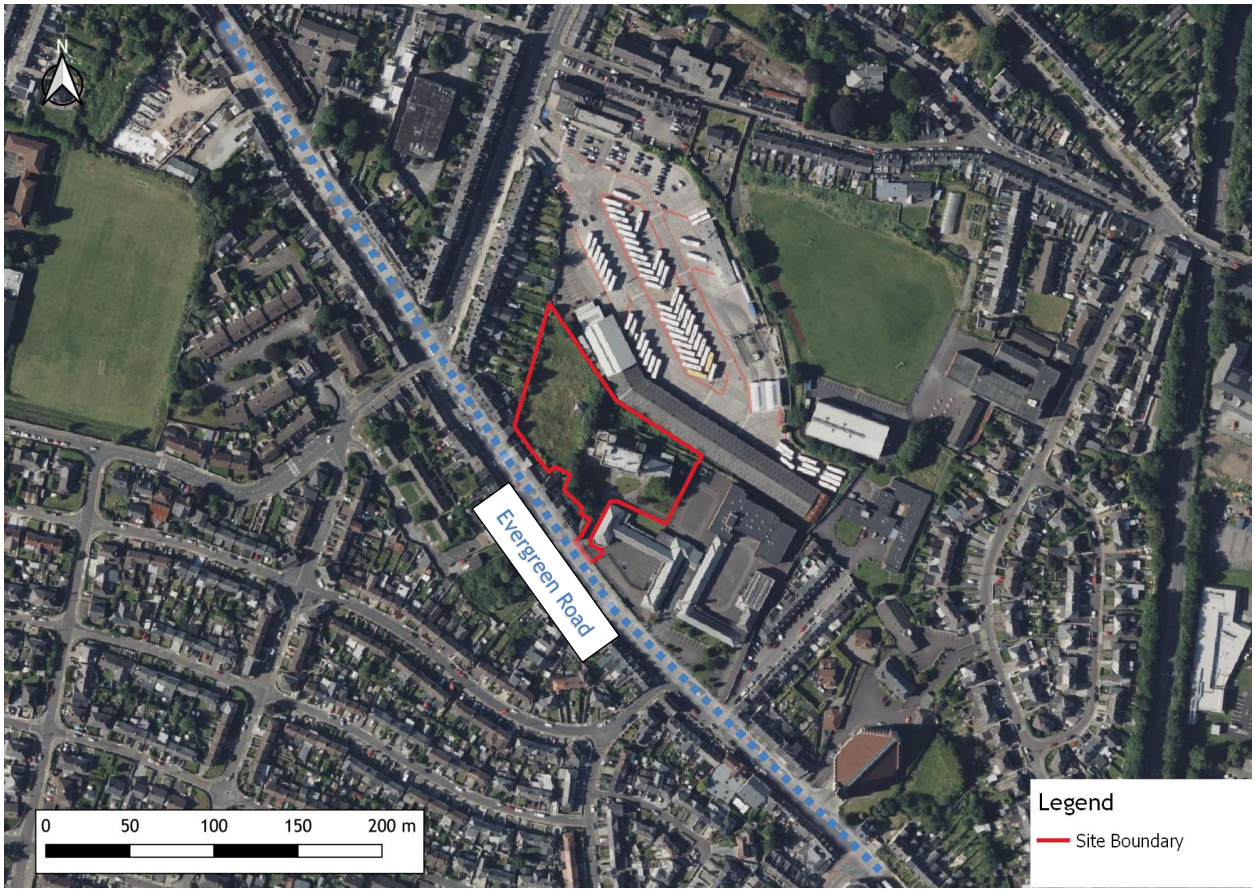

Figure 1-1: Site Location of the Proposed Development

The principal objective of the OCEMP is to avoid, minimise and control adverse environmental impacts associated with construction at the Good Shepherd site at Evergreen Road.

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 with their project specific information. The OCEMP 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 OCEMP will be developed further and/or amended where necessary to take account of site-specific requirements or conditions arising from the planning process.

1.2 Nature of the Existing Development

The site of the proposed development is a brownfield site with an existing convent building located centrally within the site. The site measures approximately 0.69 hectares and is located to the north of Evergreen Road in Cork City. The Bus Eireann Capwell bus depot bounds the north of the site and Bunscoil Chríost Rí school bounds the east. The south and west are bounded by residential dwellings. An aerial view of the site from Google Maps is shown in Figure 1-2 below.

The site is relatively flat centrally and to the east, with levels varying between 12.1mOD and 12.3mOD. The site falls in a northerly direction in the greenfield part of the site which is located in the western part of the site. Please refer to Appendix C for the full topographical survey.

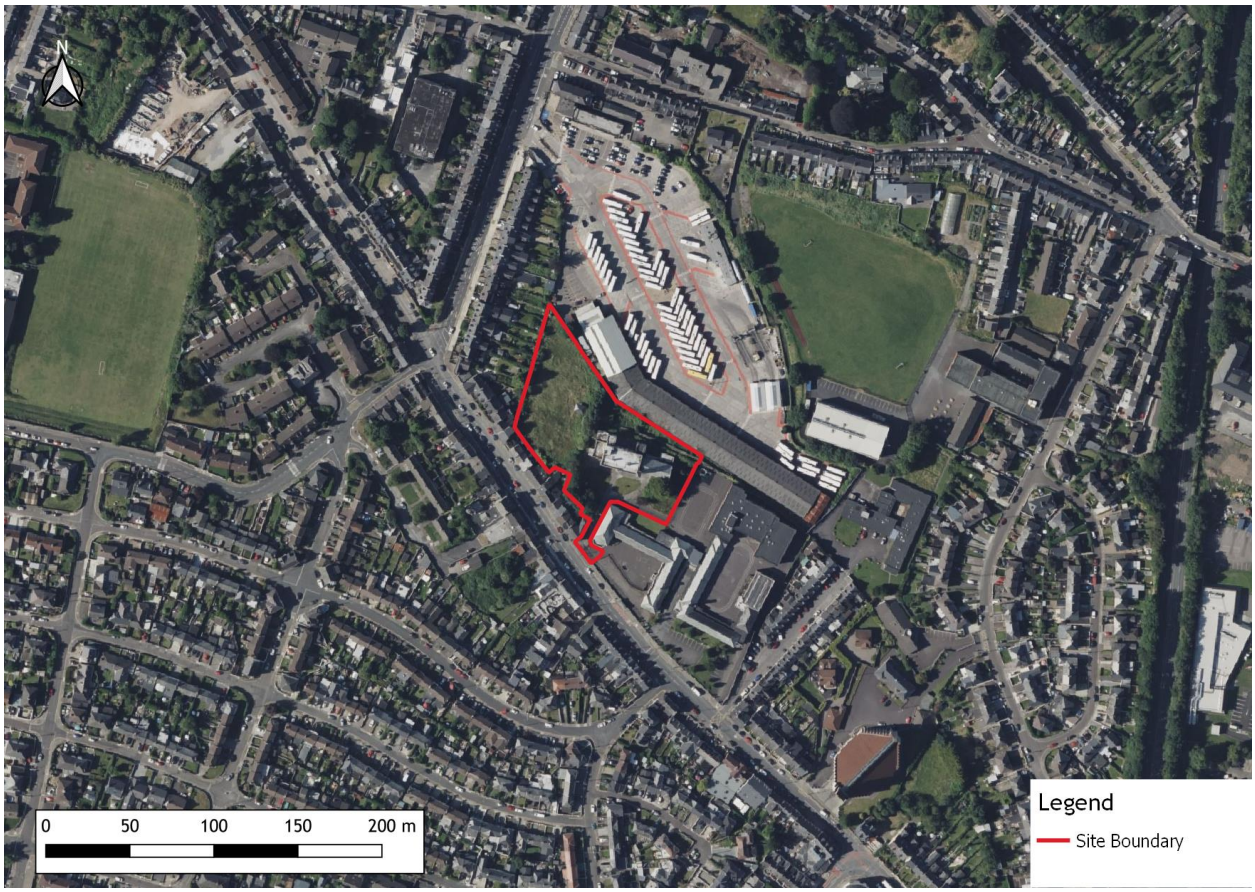

Figure 1-2: Aerial view of the existing site

1.3 Nature of the Proposed Development

The development includes design and construction of a Domestic Violence Refuge and separate new 4-storey residential apartment block (32 no. units). The existing convent building on the site will be repurposed and extended to house the Domestic Violence Refuge and the existing chapel building will be demolished. The development will include all associated roads and ancillary services.

The proposed works are outlined in a series of architectural drawings prepared by Cotter & Naessens Architects and engineering drawings prepared by PUNCH Consulting Engineers and supplied as part of planning documentation.

This development balances urban growth with sustainability, integrating seamlessly into Cork City's infrastructure while enhancing the public realm and ensuring long-term utility efficiency. All works comply with engineering and architectural standards and meet planning requirements.

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	Good Shepherd Cork	Bruac, Redemption Road, Cork.	Name: Email: Mobile:
Contract Manager	TBC	TBC	TBC
Site Manager	TBC	TBC	TBC
Environmental Compliance Officer	TBC	TBC	TBC
Consulting Engineer	PUNCH Consulting Engineers	Elm Court, Boreenmanna Rd, Ballintemple, Cork, T12 HHW2	Cian Murphy Email: cmurphy@punchconsulting.com Tel: 021 462 4000

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 the 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 sequence for a development like this, follows a logical progression from initial site setup to project completion. Below is a typical construction sequence with indicative timeframes for a project of this size, assuming optimal conditions and no major delays. The timeframes are estimates and can vary depending on weather, resource availability, and specific site conditions.

3.3.1 Site Setup (1-2 months)

- Temporary Works and Site Infrastructure:
  - Establish temporary utilities (power, water, drainage) and site offices, storage, and welfare facilities. Prepare access roads and temporary parking.
- Ground Investigation:
  - Further site testing and surveying for more detailed foundation and piling plans.

3.3.2 Groundworks and Foundations (4-6 months)

- Excavation and Earthworks:
  - Begin bulk excavation for foundations, drainage, and service trenches. Site levelling and installation of retaining walls.
- Drainage and Utilities Installation:
  - Install underground drainage, stormwater systems, SuDS, new water main and other utilities (electricity, gas, telecom, etc.).
- Foundation Construction:
  - Pour foundations for the all units.

3.3.3 Superstructure Construction (12-18 months)

- Residential Units Construction:
- Construct the superstructure of the residential units using brickwork, blockwork, or modular construction methods. Structural framing is followed by walls, floors, and roofing. Roofing and External Cladding:
  - Install roofing and external facades for all structures. Incorporate energy-efficient materials, insulation, and external finishes to meet local building regulations.
- Windows and Doors:
  - Install windows, doors, and external joinery. Ensure all structures are watertight before proceeding with interior work.

3.3.4 Internal Works (6-9 months, concurrent with superstructure)

- Mechanical and Electrical First Fix:
  - Begin the first fix for electrical wiring, plumbing, HVAC systems, and any other mechanical services.
- Internal Walls, Plastering, and Insulation:
  - Install internal walls and insulation, followed by plastering. Begin internal partitioning for residential units and commercial spaces.
- Mechanical and Electrical Second Fix:
  - Complete the second fix, which includes installing light fixtures, outlets, plumbing fixtures, and HVAC equipment.
- Interior Finishes:
  - Install flooring, tiling, paint, and any internal woodwork (doors, skirting, etc.). This stage covers all internal finishes in the residential units, management offices, crèche, and retail spaces.

3.3.5 Landscaping and External Works (3-6 months)

- Pavements, Car Parks, and Access Roads:
  - Construct external pavements, walkways, access roads, and parking areas.
- Landscaping and External Lighting:
  - Carry out hard and soft landscaping, including gardens, public areas, green spaces, and external lighting. Plant trees, install street furniture, and ensure proper drainage for outdoor areas.

3.3.6 Testing, Commissioning, and Inspections (2-3 months)

- Building Control and Fire Safety Inspections:
  - Conduct inspections to ensure compliance with building regulations, fire safety standards, and local authority requirements.
- Mechanical and Electrical Testing:
  - Test and commission all mechanical, electrical, and plumbing systems, including HVAC, water systems, fire alarms, and security systems.
- Snagging and Defects Rectification:
  - Identify and rectify any construction defects (snagging) before the final handover.

3.3.7 Final Handover and Occupation (1-2 months)

- **Handover of Residential Units**:
  - Conduct a final inspection of the completed development and hand it over to the client, Good Shepherd.

4.0 Environmental Impacts

The following is intended as a framework of anticipated 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.

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;
- 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 local area due to vehicles involved in the construction process;
- 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

Environmental considerations for civil and structural elements are critical to minimizing the ecological footprint of residential developments, ensuring sustainability, and complying with environmental regulations. Below are key environmental considerations for the civil and structural aspects of such a project.

5.1 Demolition and Site Clearance

The deconstruction of any existing buildings will be carried out using a systematic demolition method and sequence. Safe working practices will be carefully planned and implemented, following standard dismantling techniques. The site will be securely hoarded before beginning the demolition process.

Initially, soft stripping will be conducted, removing all fixtures and fittings to reduce the structure to its shell. Once all fixtures and fittings have been stripped and appropriately segregated, long-arm track-mounted shear cutters will be employed to take the structure down to ground level. 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 Management of Excavated Material

Managing excavated material during the construction is essential for minimizing environmental impacts, ensuring efficient use of resources, and complying with regulations. Proper handling, reuse, and disposal of excavated material can significantly reduce the project's overall environmental footprint. 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 to be prepared by the Contractor.

5.3 Surface and Wastewater Management

The proposed development will implement sustainable drainage systems (SuDS) such as green roofs, soakaways, infiltration basins, tree pits, all to manage stormwater on-site, reducing runoff, preventing flooding, and enhancing groundwater recharge. Regarding ground water management, the contractor shall ensure that construction activities do not contaminate local water bodies or groundwater. Implement measures to prevent chemical spills and manage wastewater effectively.

Proper handling and treatment of wastewater can prevent pollution, protect public health, and comply with environmental regulations. Section 6.0 of this document will expand on surface water and wastewater management.

5.4 Waste Management

An Outline Construction Waste Management Plan is indicated in Section 9 of this report. The purpose of the Construction and Demolition Waste Management Plan (C&D WMP) is to provide the information necessary to ensure that the management of C&D waste at the site is undertaken in accordance with current legal and industry standards including the Waste Management Act 1996 and associated

Regulations, Litter Act 1997 and the Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021. Section 9.0 of this document will expand on surface water and wastewater management.

5.5 Traffic Management

The traffic management plan during construction aims to minimize environmental impacts, ensure safety, and maintain positive relations with the local community. These traffic management requirements apply to all Contractors involved in demolition and construction activities for the proposed development at Turner's Cross. Each Contractor must incorporate the provisions of this Outline Construction Traffic Management Plan into their own Construction Traffic Management Plan, which must be approved by CCC prior to the commencement of work on-site. Section 10.0 of this document provides further details on managing demolition and construction traffic.

5.6 Air Quality Management

Managing air quality during the construction of a residential development is crucial to protecting public health, minimizing environmental impact, and ensuring compliance with regulations. Effective air quality management involves controlling dust, emissions, and other pollutants generated by construction activities. Section 11.0 of this document will expand on air quality management responsibilities.

5.7 Noise and Vibration Management

Effective management strategies can minimize disturbances and prevent damage to nearby structures and wildlife. The management of noise and vibration will protect the well-being of residents, workers, and the surrounding environment. Section 12.0 of this document will expand on noise and vibration management responsibilities.

6.0 Demolition and Site Clearance

6.1 Pre-Demolition Planning

The contractor shall assess the structural integrity of existing buildings and any potential risks associated with demolition. In addition, the contractor shall conduct a survey to identify hazardous materials such as asbestos, lead, and other toxic substances. The contractor shall ensure that the following guidelines and regulations are adhered to,

- Waste Management Act 1996 (as amended)
- European Union (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011)
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, 2006
- Cork City Council Waste Management By-Laws
- Safety, Health, and Welfare at Work (Construction) Regulations 2013

6.2 Hazardous Material Management

The contractor shall allow for the safe removal of hazardous materials, if specialised subcontractors are required, the contractor shall employ licensed and trained subcontractors for the removal of hazardous materials. Appropriate containment methods shall be used for hazardous materials and the contractor shall ensure that materials are disposed of at licensed facilities in accordance with regulatory requirements.

The contractor shall implement measures to prevent the spread of hazardous materials during demolition, such as using enclosures or wetting down surfaces to minimize dust.

7.0 Management of Excavated Material

7.1 Material Reuse and Recycling

Due to the nature of the development, it is envisaged that all excavated material will be carted off site.

7.2 Contamination Management

7.3 Contamination of the excavated material is not expected; however, site investigation works are currently ongoing. Should any contamination risks be identified through these investigations, the contractor shall implement appropriate measures. These measures include preventing further contamination by keeping hazardous substances away from excavation areas and following proper storage practices. Protective covers shall be used to protect the excavated material from environmental factors such as rain, dust, or debris. The contractor shall also segregate any contaminated material from clean material and ensure its treatment and disposal at licensed facilities in accordance with regulatory requirements. Dust and Erosion Control

Regularly spray water on excavated material and access roads to control dust emissions. The use of dust suppressants shall be permitted if needed to reduce airborne particles. If water spraying is not an option, the contractor may install dust barriers or screens around excavation areas to limit the spread of dust.

Wheel washing facilities will be provided by the Contractor as required in order to ensure that trucks are clean prior to leaving the site and to prevent roads outside the site accumulating construction dust.

7.4 Transportation and Logistics

Efficient transport routes shall be planned to ensure excavated material can be transported with minimal effects on fuel consumption and environmental impacts. The contractor shall ensure that trucks and transport vehicles are appropriately loaded to prevent spillage and reduce dust emissions during transit. Transport vehicles shall be regularly maintained to ensure they operate efficiently and with minimal emissions. Use low-emission vehicles if available.

7.5 Documentation and Reporting

The contractor shall maintain accurate records of excavated material, including quantities, locations, and handling methods. The contractor shall document any contamination issues and how they were managed.

The contractor shall provide regular reports on excavated material management to the Consulting Engineer, as required. This includes reporting on reuse, recycling, and disposal activities.

8.0 Surface Water and Wastewater Management

8.1 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 any required secondary site facilities, including parking, will also be defined. The site facilities which will be provided will include site offices along with a 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 Cork City Council (CCC) and Uisce Eireann (UE) for approval prior to construction of the facilities.

8.2 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, liaison with CCC/UE will be required in advance of any temporary connection being formed to cater for such discharges. 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.
- 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. 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 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.

8.3 Dewatering

Should ground water be encountered during the excavation of the drainage, again not envisaged with its depth, this will be captured and held in a settlement tank prior to discharge to the existing storm drainage system. 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. 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.

9.0 Waste Management

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.

9.1.1 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.

9.1.2 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.

9.1.3 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.

9.2 Quantities of Waste

Waste which will be generated by the demolition of existing buildings, 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.

9.3 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.

9.4 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.

9.5 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.

9.6 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.

9.7 Control of Fuels and Lubricants

9.7.1 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.

9.8 Asbestos Management

A fully intrusive Asbestos Refurbishment and Demolition Survey will be completed at pre-construction stage of the project. Prior to commencement of the demolition works, all asbestos containing materials identified by the Asbestos Refurbishment and Demolition Survey will be removed by a suitably trained and competent person. Asbestos-containing materials will only be removed from site by a suitably permitted/licensed waste Contractor and will be brought to a suitably licensed facility. The Health and Safety Authority will be contacted where needed in relation to the handling of asbestos and material will be dealt with in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006, as amended and associated approved Codes of Practice. The Contractor shall comply with mitigation measures outlined within the Asbestos Refurbishment and Demolition Survey Reports.

10.0 Demolition & Construction Traffic Management

10.1 Construction Traffic Access to the Site

10.1.1 Location and access to the site

The site will be accessed primarily via Evergreen Road. See Figure 10-1 below. Construction related traffic will exit the site onto Evergreen Road, before proceeding to South Link Road (N27). Traffic will proceed from that point to the South Ring Road N40 to head eastwards or westwards. Refer to Figure 10-2 below for illustration.

The management of construction traffic on the public road network around the development will be a critical part of the overall project and must be actively managed by the Contractor.

Figure 10-1: Evergreen Road (Heading southbound) © Google Maps

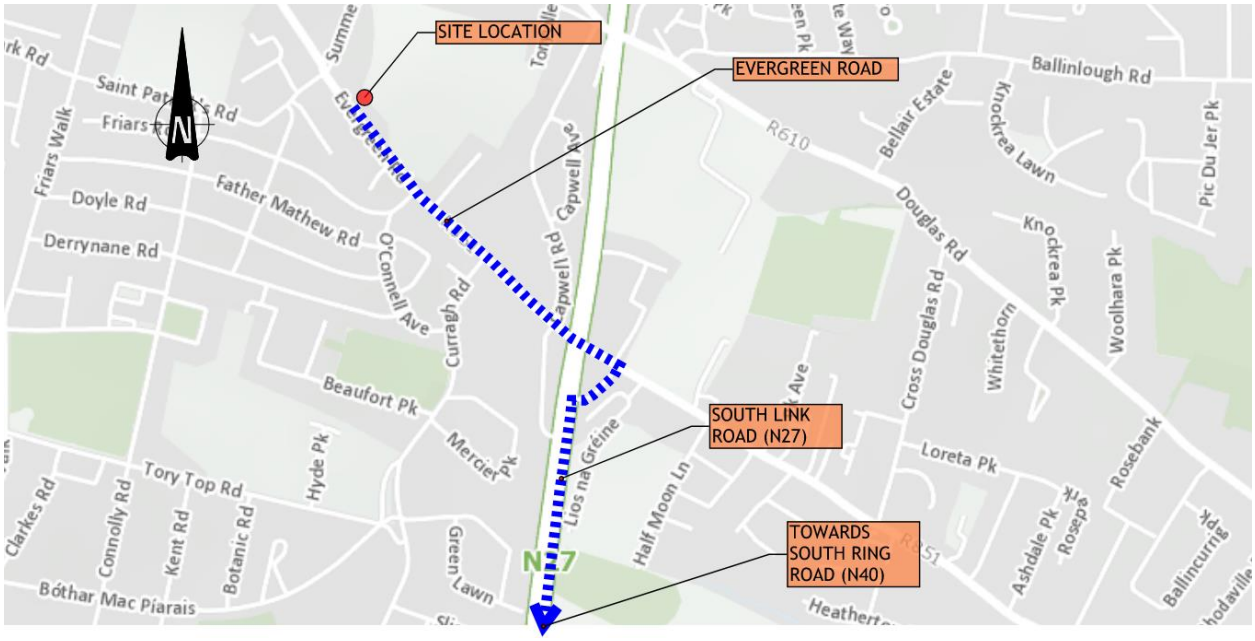

Figure 10-2: Construction Traffic to and from Site (© OSI)

10.1.2 Definition of Construction Traffic

Construction traffic means the following vehicles:

1. HGVs & haul trucks – i.e. vehicle with 6 tyres or more as set out in the RSA publication 'Guidelines on Maximum Weights and Dimensions of Mechanically Propelled Vehicles and Trailers, Including Manoeuvrability Criteria'
2. Site machinery such as excavators, tippers, bulldozers, etc.
3. Concrete trucks.

Smaller vehicles used by construction workers to access the site, such as cars and vans, are not deemed to be construction traffic.

10.2 Management of Construction Traffic around the Turner's Cross Site

The Contractor is required to control the construction traffic in and around the proposed development location, with access to the site via Evergreen Road. The Contractor must adhere to the following:

- Communicate clearly to all construction staff and subcontractors that they are bound by these restrictions.
- Schedule site traffic in advance to ensure that these restrictions are adhered to.
- Monitor construction traffic at key points remote from the site to check compliance.
- Details of the Contractor's management plan must be submitted to CCC in advance of construction and included as part of the Construction Management Plan.
- Vehicle movements associated with ancillary, maintenance and other non-essential activities will be minimised during the peak traffic hours on the public road in the vicinity of the site. These are the hours of 8:00-9:00AM in the morning and 17:00-18:00PM in the evening. Consideration shall be made of school drop off/pick up times in the vicinity of the site. Additionally, the Contractor shall regularly liaise with Church of Christ The King, Turners Cross and other local stakeholders to ensure that unforeseen events such as mass, funerals or similar will be minimally impacted by construction traffic.
- A special permit for moving oversized and hazardous loads will be obtained from CCC / An Garda Síochána prior to any such movements.
- Daily construction programmes will be planned to minimise the number of disruptions to surrounding streets by staggering HGV movements to avoid site queues.
- It is envisaged that there will be provision for on-site parking, sufficient only to serve those directly involved with the works.
- Construction vehicles will follow the road hierarchy as much as practicable - i.e. construction vehicles will be directed away from local or minor streets and roads and will be required to use designated primary national and regional routes for accessing the site.
- The Contractor will appoint a Traffic Management Coordinator who will be responsible for the coordination of all traffic safety and traffic management matters. The Traffic Management Coordinator will ensure that all traffic management requirements set-out in the CTMP are met.

10.3 Proof of Compliance with Traffic Restrictions

The Contractor will track the transit of construction traffic in the area for the duration of the works.
The Contractor will control traffic movements using the following procedure;

- Develop a restrictions and rule adherence form that all lorry drivers and site operatives will sign.
- All traffic movements to and from site to be managed by the Contractor's transport manager in accordance with these restrictions.
- Appointed person located at the site entrance to issue dockets and record all traffic entering and leaving site.
- Records to be reviewed periodically by the site manager.
- Prior to any new contractors starting, all persons must sign up to restrictions and prequalification forms.
- A certified Flagman must be present to coordinate the traffic entering and leaving the site.

10.4 Construction Traffic Access to site via Evergreen Road

10.4.1 Traffic Management Procedures / Generation

All deliveries will be booked into site at least one day before delivery. All drivers will contact the site gate man 15 minutes before arrival on site.
All construction traffic will arrive along the main access roads with entry to the site via its southeastern site boundary. All deliveries will be off-loaded without delay by the most appropriate method and escorted off site.
The site gate man will be responsible for ensuring that there is no conflict between pedestrians and vehicles / entering / exiting the site.
It is predicted that there will be an average of 50 personnel on site during peak construction activity. Accounting for car sharing, there could be in the order of 20 vehicles arriving and departing the site every day during peak construction activity. Additionally due to the proximity of the site to Public Transport, it is envisaged percentage of construction staff will use public transport. Site parking will be limited to 20 no. spaces, therefore additional parking, if required, will need to be found in off street carparks. It is envisaged that working hours on site will be 08:00 hrs to 19:00 hrs Monday to Friday and 08:00 hrs to 16:30 hrs Saturday, therefore the peak movements in and out of the site should occur outside of the AM/PM rush hour traffic.
For a rigid HGV hauling material to the site, it will typically take 15 mins from when the rigid arrives at the site entrance, travels to the unloading area, empties its load and leaves the site.
The worst-case scenario is excavation works with an estimated average of 2 HGV's per hour predicted during peak renovation activity. It is envisaged that HGV movements will be undertaken outside of AM/ PM rush hour traffic and with consideration of school drop off/collection periods. The Contractor shall regularly liaise with Church of Christ The King, Turners Cross and other local stakeholders to ensure that unforeseen events such as mass, funerals or similar will be minimally impacted by HGV traffic.

10.4.2 Traffic management – Internal Site Extents

Contractor / subcontractor / supplier parking is not permitted on any local access routes. Vehicles must be parked within approved designated areas within the site extents. To minimise congestion, a traffic management plan will need to be developed by the Contractor to ensure that construction workers access the site using alternative means of transport (i.e. public transport) to negate impacts on the local network.

No unloading or blockages of access routes, including emergency vehicle access routes. Such vehicles will be immediately requested to move to avoid impeding works.

In accordance with this OCTMP, the Contractor must appoint a Traffic Management Coordinator responsible for the management of traffic management related activities on site.

The Contractor must carry out an auto-track analysis to ensure that adequate turning space is available. The auto-track must demonstrate how construction vehicles will go in and out of the site. Contractors must eliminate where possible the necessity for reversing of any construction or supply chain vehicle onsite. Contractor is to note requirement for traffic management.

10.4.3 Traffic management coordination meetings

Monthly logistics coordination will be undertaken where the traffic management strategy, traffic management coordination (and implementation of any required temporary traffic management schemes) will be discussed and agreed.

10.4.4 Construction Access Road required behaviours

The Contractor must adhere to established traffic management measures specified in the Construction Traffic Management Plan including:

- Queuing procedures outside the site for vehicles seeking to enter the site to prevent back-up onto the local road network;
- Sign-in requirements;
- Visual PPE checks;
- Arrangements for infrequent visitors, e.g., project team, client visitors;
- Compliance to sign-in requirements, use of turnstiles and/or swipe cards; and
- Collaborate with any required security searches of vehicles entering or exiting.

All Contractors will be deemed to have inspected and examined the site and its surroundings at tender stage and to have satisfied itself as to the nature and means of access to the site.

In the event of a Contractor not being satisfied with the permitted access routes to and from the site, the Contractor is obliged to provide for all expenses and charges for temporary way-leaves and temporary truck/vehicle holding areas in connection with different access arrangements to the site. Any amendments must be to the satisfaction of CCC.

10.4.5 Loading/Unloading locations

Vehicles must be loaded and unloaded within the site area (i.e. access routes, site compound set-up and loading areas to be developed and agreed with the Contractor). Contractors are not permitted to carry out loading or unloading on the public roadway. This approach reduces the risk to the public, reduces

congestion, and minimises disruption and risk to any passing vehicles. All deliveries and collections should be overseen and managed for the Contractor by a nominated competent person.
Contractors must consider and explain how to manage the impacts on cyclists, pedestrians, other road users, and any affected roadway infrastructure.

10.4.6 Emergency Access

Access for emergency vehicles via the primary haul roads must be maintained at all times.

10.4.7 Asset Protection

The Contractor must take care to avoid damage to roads, footpaths, grass margins, and other surfaces and all walls including protected walls, structures including protected structures and the associated curtilage, trees, lighting fixtures and all other street furniture within or outside of the overall site. They shall be liable for the cost of repairing / replacing all such damage caused by its operations to the satisfaction of CCC.
Contractors must take precautions to ensure against spillage of diesel fuel, contaminated water or solvents. Any damage so caused shall be made good by the offending Contractor at its own expense. There may also be repercussions relating to planning conditions for which the Contractor will be liable.
Contractors must prohibit the use of tracked plant on road surfaces outside of the site unless suitably approved protective measures are taken to safeguard the integrity of surfaces.
The Contractors Construction Management Plan must include specifications regarding the quality of temporary reinstatements and the timelines for permanent reinstatements of roads and pavements affected by the works.

11.0 Air Quality Management

11.1 Emission Sources

Construction vehicles, generators etc., will give rise to some exhaust emissions.

Considering the existing traffic levels in the area, along with the use of the surrounding buildings, 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 workers and other members of the public. This will include regular housekeeping procedures.

11.2 Mitigation Measures

A dust minimisation plan will be formulated for the construction phase of the project. 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 business's, 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.

Vehicles delivering or removing material with dust potential to/from the site shall be enclosed or covered with tarpaulin at all times to ensure no potential for dust emissions.

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.

12.0 Noise and Vibration Management

12.1 Noise

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.

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, L_{eq}, measured on Site [dB(A)]**	**Period of Hours over which L_{eq}, 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).

12.2 Vibration

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. Given the site location the base vibration levels from the port operations would be the main factor. 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. For example, piling, one of the primary sources of vibration during construction, is typically tolerated at vibration levels up to 5mm/s. 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;
- British Standard BS 5228-2:2009: Code of practice for noise and vibration control on construction and open sites; and
- 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.

12.3 Noise and Vibration Mitigating Measures

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 other adjoining land owners;
- appointing a site representative responsible for matters relating to noise and vibration;
- monitoring typical levels of noise and vibration during critical periods and at sensitive locations;
- all site access roads will be kept even, to mitigate the potential for vibration from lorries;

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.

13.0 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 construction of Domestic Violence Refuge and Social Housing at Turner's Cross, Cork.

This OCEMP 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 the planning process.

This OCEMP 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 OCEMP as part of their contractual responsibilities and update in further detail.