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PLANNING SUBMISSION

CONSTRUCTION ENVIRONMENT & WASTE MANAGEMENT PLAN

ENGINEERING REPORT FOR

HAVENFALLS LTD

WATERROCK,

MIDLETON, CO. CORK.

OCT 2022

REVISION E

JOB NO: 21059

CONTENTS

1.0 DOCUMENT CONTROL

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Revision	Date	Prepared	Checked	Approved
A (DRAFT)	22/12/2021	E Kingston		
B (DRAFT)	27/01/2021	E Kingston		
C	08/03/2022	E Kingston		
D	03/06/2022	E Kingston		
E	07/10/2022	E Kingston	D Butler	D Butler

2.0 CONSTRUCTION ENVIRONMENTAL & WASTE MANAGEMENT PLAN

2.1 SITE DESCRIPTION

The proposed development to the north of Nordic Enterprise Park is located approximately 1km to the north-west of Midleton town centre.

Aerial View of Site, outlined Red (extract from Google Earth)

The site consists of a greenfield land made of two adjoining parcels of land and is currently bounded by agricultural lands on all sides.

The development will necessitate the construction/provision of new site infrastructure to service the proposed units. Such infrastructure will include foul & surface water drainage, water, utilities, and access roads.

The proposed scheme will tie into the permitted LIHAF road which includes for the provision of local services to serve future development.

The existing site elevations range from circa 11.0m OD on the south-eastern boundary (overlooking the Owenacurra River) to circa 17.5m OD closer to the Eastern side of the site.

There are existing hedgerows forming the majority of the site boundaries which will be retained where possible in line with the landscaping plan.

The development will necessitate the construction/provision of new site infrastructure to service the proposed dwellings. Such infrastructure will include completion of the foul & surface water drainage, water, utilities, and access roads which will tie in with the LIAFH Road and associated infrastructure proposed to the south.

2.2 INTRODUCTION

Havenfalls Ltd intend to apply for planning permission for a proposed LRD development at Water Rock, Midleton, County Cork on a circa 9.5 hectare site.

Site Plan with Access point identified with arrow.

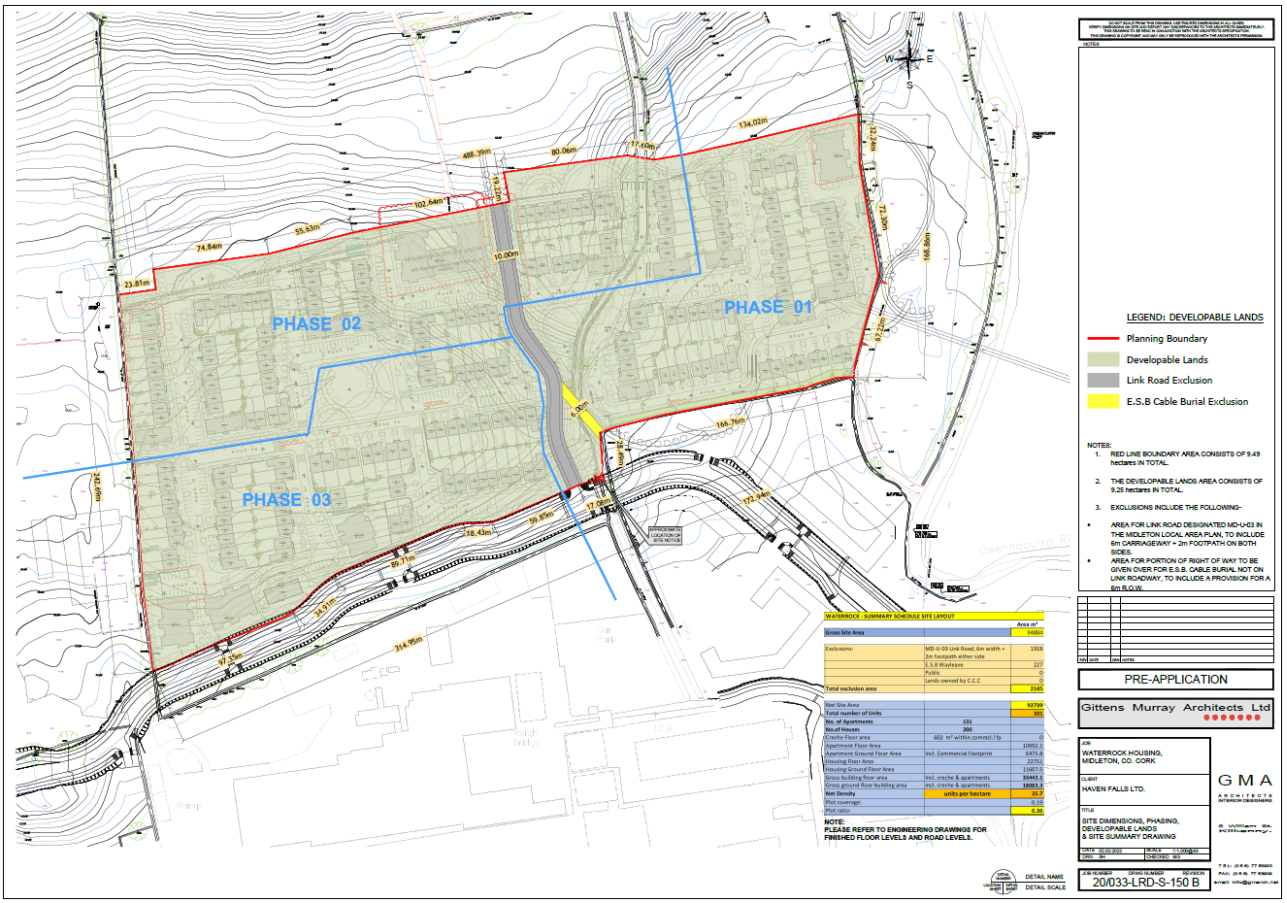
LIHAF Road shown Yellow

This document presents a draft construction and demolition waste plan and pollution prevention measures associated with a proposed 330No residential units, with Neighbouring Centre and Creche.

The construction phase of the project needs to be carefully controlled so as not to have significant impacts on the environment and the local community. Both the client and the construction contractor have key responsibilities in ensuring that these environmental impacts are controlled adequately. Management during the construction works will be delivered through the development of a Construction Management Plan (CMP). The CMP will detail how construction works will be undertaken and managed in accordance with the Planning Application, Planning Conditions, contractual and legislative requirements, and construction industry best practice.

2.3 PROPOSED PHASING

It is expected that this site will be developed over a ten-year period and be broken down into 3 phases.



Site Plan with Phasing Plan Indicated.

As indicated above, the initial phase, Phase 01, of the development to be constructed will be to the East of the site and will include the main access road which connects to the LIHAF Road.

Phase 02 will be the works to the North-West of the site.

Phase 03 will see the completion of the site with the central area and South-West of the site being completed.

CONSTRUCTION MANAGEMENT PLAN

The Construction Management Plan forms part of the planning application documentation for the project and provides details on the requirements for the management of environmental impacts associated with the construction phase of the project together with a suggested framework from which the CMP will be produced.

The contract documentation for the works will include the CMP (updated to take account of any commitments agreed during the planning process) and will ensure that there is a requirement on the contractor to comply with the actions set out in the CMP and to demonstrate to the client how they intend to identify further environmental impacts and implement the detailed mechanisms for managing the impacts of works on site. The CMP will be developed, and all site works should be undertaken in compliance with the CMP. The CMP shall include details of the topics listed below, further information on which is given in the following sections.

- Project Organisation and Responsibilities;
- Project Communication and Co-ordination;
- Training;
- Operational Control;
- Checking and Corrective Action;
- Complaints Procedure;

The CMP will be reviewed at least every twelve months during the construction process and will include information on the review procedures.

2.4 PROJECT ORGANISATION & RESPONSIBILITIES

Havenfalls Ltd are the clients and have appointed O'Shea Leader Consulting Engineer's as part of the design team. The following list form part of our responsibilities:

Review and approve the Contractor's CMP together with any specialist procedures and identify the need for any improvements;

Identify the competence of all contractors to be employed for the works;

Review construction method statements regarding environmental aspects and advise of suggested improvements prior to works commencing, and

Provide main contact between contractor and Client's project team on environmental & construction issues.

Havenfalls Ltd will act as the Contracts Manager and Site Manager

The following are responsibilities of the Contracts Manager:

Develop and review the CMP, construction method statements, work instructions and other specialist procedures;

Identify competence requirements for all staff and ensure delivery of training to the project team;

Review and improve method statements for environmental aspects prior to works starting;

Monitor construction activities to ensure that identified and appropriate control measures are effective and ensure compliance with the CMP.

Act as main point of contact between the regulatory authorities and the project on all issues;

Provision of advice and liaison with subcontractors to ensure that risks are identified, and appropriate controls developed which are identified within method statements;

Assist with the development and undertaking of training for site staff;

Liaison with the Client Project Manager.

The following are responsibilities of the Site Manager:

Assist the contract manager in developing and maintaining the CMP together with other documentation.

Monitor construction works to ensure any necessary control measures are in place and meet the requirements of the CMP.

Carry out weekly site inspections and complete inspection report identifying any actions required.

Maintain training register and provide training where necessary.

Assist in responding to complaints.

In the event of an environmental incident ensure correct procedures are adhered to.

Provide information on waste management/reduction procedures to relevant staff.

Implementation and operation of environmental controls on site;

Respond to any environmental incidents such as spills.

2.5 PROJECT COMMUNICATION AND CO ORDINATION

Periodic meetings will be held between the team members to discuss performance to date, the need for improvements (if any), results of inspections and any complaints received. Upcoming work operations will be reviewed in order to plan any necessary actions to mitigate risks and to disseminate information on best practice. If necessary, representatives of the Statutory Authorities may also be invited to attend such meetings, as and when required.

2.6 OPERATIONAL CONTROL

Site works will be checked against the CMP requirements. Any mitigation measures that have been agreed with the Statutory Authorities, or are part of planning conditions, will be put into place prior to the undertaking of the works for which they are required, and all relevant staff will be briefed accordingly. Method statements that are prepared for the works will be reviewed / approved by the Client Project Manager.

2.7 CHECKING & CORRECTIVE ACTION

Daily inspections of the site and the works will be undertaken to minimise the risk of environmental damage and to ensure compliance with the CMP. Any environmental incidents are to be reported immediately to the Site Manager. The Contracts Manager will undertake monthly inspections and complete an assessment of the project's performance regarding the relevant standards/legislation and the contents of the CMP. Following these inspections, the Manager will produce a report detailing the findings which will be provided to the Client Project Manager and reviewed at the monthly project meeting.

3.0 ENVIRONMENTAL CONTROL MEASURES

3.1 HIGHWAYS: CONSTRUCTION PHASE TRAFFIC

In order to mitigate the impact of construction traffic during network peak hours, a Traffic Management Plan will be developed and implemented by the Contracts Manager. This plan will focus on the:

- Co-ordination of car parking construction personnel.
- Implementation 'just in time' contract plant hire
- Restriction of unnecessary vehicle movements during the day; and
- Co-ordination of deliveries to arrive outside of peak times where appropriate.

3.2 AIR QUALITY

No specific mitigation, other that adopting best construction practices are proposed regarding air quality. The CMP will ensure that measures are in place to minimise dust during construction activities, during drier periods and earth works operations.

3.3 NOISE AND VIBRATION

It is not envisaged that issues associated with noise and vibration will be encountered but industry recognised controls will be instigated.

3.4 CONSTRUCTION NOISE

The assessment of construction noise has shown that the adopted criterion is unlikely to be exceeded at the nearby noise-sensitive receptors. The predicted increase in the ambient noise climate would lead to a minor, barely perceptible, impact at all locations assessed. Several safeguards exist to minimise the effects of construction noise, and these will apply during the construction of the proposed development infrastructure. The safeguards include:

- The various EC Directives that limit noise emissions of a variety of construction plant.
- Guidance set out in BS5228: Part 1:1997, that covers noise control on construction sites; and
- The powers that exist for local authorities under Sections 60 and 61 of the Control of Pollution Act 1974 to control environmental noise and pollution on construction sites.

In addition, the following measures will be considered, where appropriate:

- Any compressors brought on to site should be silenced or sound reduced models
- All pneumatic tools should be fitted with silencers or mufflers.
- Delivers should be programmed to arrive during daytime hours only. Care should be taken when unloading vehicles to minimise disturbance to residents. Delivery vehicles should be prohibited from waiting within the site with their engines running.
- All plant items should be properly maintained and operated according to the manufactures' recommendations in such a manner as to avoid causing excessive noise. All plant should be sited so that the noise impact at nearby noise-sensitive properties is minimised.
- Problems concerning noise from construction works can sometimes be avoided by taking a considerate and neighbourly approach to relations with residents. Works should not be undertaken outside the hours agreed with the local authority. Experience from other sites has shown that by implementing these measures, typical noise levels from construction works can be reduced by 5dB(A) or more. As construction works are temporary and noise levels have been calculated for a worst-case situation no further mitigation measures are considered necessary.

3.5 CONSTRUCTION VIBRATION

Vibration during construction operations is unlikely to be perceptible at any of the nearby vibration-sensitive receptors due to their distance from the site. It is however recommended that construction vibration levels are subject to a watching brief with vibration measurements take as necessary.

4.0 CONTROL OF WATERCOURSES, GROUNDWATER

4.1 WATER MANAGEMENT & POLLUTION

Precautions will be taken prior to and during construction to ensure the protection of watercourses and groundwater against pollution. The measures would be informed by the site investigation works and by CIRIA Report 532 'Control of Water Pollution from Construction Sites' and Environment Agency Pollution Prevention Guidelines, principally PPG6 – 'Working at Construction and Demolition Sites'.

4.2 WHEEL WASH

Site vehicles will have wheels washed down prior to leaving the site so as to reduce unwanted debris spreading onto the highway during major earth works.

5.0 STORAGE OF MATERIALS

Construction materials such as cement, oils, and fuels for site plant etc have the potential to cause pollution. All fuel, oil and chemical storage must be sited on an impervious base within a secured bund of adequate storage capacity. The risk of fuel spillage is greatest during refuelling of plant. Mobile plant would be refuelled either off site or within a designated area on hard standing. All pumps, hoses etc would be checked regularly

During the project the estimated quantities of construction and demolition waste surpluses will supplied in a table format similar to Table 1 below.

C & D Waste/Material & (CWC Code)	Quantity (tonne)
Soil and Stone (17 05 04)	3000 imported
Concrete	500
Masonry	200
Wood	200
Packaging	20
Hazardous Material (Asphalt and Lead Flashing)	none
Other Waste Materials (Windows, Doors, Fittings, Pipes and Electrical Wiring	100
Total	4020

Table 1:C & D Waste Arising on from Site Excavation

Due to the levels on site, it is proposed that it will be required to import 5000 tonnes of fill to the site.

The majority of this will be generated on site from foundation excavation and the balance will be imported from a licenced quarry

List of Waste (EWC Code)	Waste Type (description)	Volume of Waste Generated (Est tonnes)	Waste Exported Off Site (Est tonne)	Waste Imported On Site (tonne)
17 05 04	Soil & Stone	0	0	3000
17 05 01	Concrete	250	250	none
17 01 07	Masonry	100	100	none
17 01 01	Wood	100	100	none
17 02 03	Plastic/Packaging	10	10	none
17 04 05	Iron & Steel	50	50	none

6.0 CONSTRUCTION SCHEDULE

It is proposed on a successful application that there will be four phases of construction. The dwelling units will be developed on a sequential basis starting on the eastern part of the site and generally moving sequentially.

Each phase will subsequently be broken down to allow for areas of works to be closed out and made available to new occupants.

6.1 PHASE 1A – SITE SET-UP

This task will take up to two weeks to complete with approximately up to 4-8 staff employed. It will involve site clearance (given the lack of existing scrub/vegetation this will not be significant), set up of a site office, compound, secure the construction site and erection of signage for site security & safety purposes. The provision of temp foul and storm sewers will be provided for in the site office location and can connect directly into the existing foul network.

6.2 PHASE 1B – SETTING OUT OF SITES AND PROVISION OF SERVICES

Given the degree of work involved in the provision of storm & foul services this stage will involve significant work and is estimated to take between 2-5 months. This will involve the laying of sewers mainly within and the site, the provision of footpaths, lighting, and roadways. As part of any works (i.e., provision of services) along the public areas/roads in the vicinity of the site, it will be ensured that the surface of the roads/areas will be re-instated to a high standard and to the satisfaction of the local authority.

6.3 PHASE 2 – CONSTRUCTION OF RESIDENTIAL UNITS

The construction of the residential units will, to a certain degree respond to the demand/sale of the units involved, it is estimated to be constructed/completed over a four-year period. It will involve up to 30 No. construction staff (depending on the number of units being constructed at any one time). However, it is proposed to construct the development in single phase commencing on the eastern side and working west.

6.4 SITE COMPOUND/PUBLIC ROAD

There will be parking spaces at the site compound, reserved for staff, clients, and visitors. This will be located on the eastern side of the site. On street parking or queuing along the main road will not be acceptable under any circumstances with all construction traffic proposed through the existing public road to the south of the site.

All construction traffic will enter the site directly from the site access on the southern boundary, which will eventually form the main access to the completed development. Depending on the rate of completion of the east-west LIHAF Road being developed by Cork County Council, access to the site will either be along that, or perhaps via the existing laneway to the north of Nordic Business Park.

It will be the responsibility of all vehicle owners/operators to inspect their vehicles before they leave the site for stones caught in their tyres or any other debris. Unauthorised entry will not be permitted and will be prevented by a security system which will be in operation during construction.

7.0 PROPOSALS FOR MINIMISATION, REUSE AND RECYCLING OF C & D WASTE AND ENVIRONMENTAL MITIGATION MEASURES

C&D waste will arise on the Project mainly from excavation activities. It is expected that while there will be unavoidable construction waste, material surpluses, and damaged materials that will need to be disposed of. The Developers shall ensure that materials are ordered so that the quantity delivered; and the storage is not conducive to the creation of unnecessary waste.

Where possible construction works will employ prefabrication techniques, thereby minimising onsite waste in favour of an optimised industrial process with established recycling and waste minimisation procedures i.e., prefabricated steel, prefabricated roof truss, cut to size cladding etc.

Excavated soil/stone will be carefully stored in segregated piles on the site for subsequent re-use within the development where it is deemed acceptable by the site Engineer to do so. Excess material will be removal from site to a suitable permitted C & D disposal site.

Concrete waste resulting will be minimal and will be generated from the construction process. This waste will be source segregated and will either be stored in piles for further processing on site or will be used as lean mix in conjunction with hard-core fill. Where necessary it is intended that hardened concrete waste will be crushed on site with the resulting aggregate being used as part of the hard-core fill (Not used as fill under houses or footpaths). As the concrete waste will be the excess left as a result of ordering there will not be any reinforcing steel to recycle.

Masonry waste resulting from the construction process will be source segregated and will be stored in piles for further processing on site. It is intended that suitable masonry waste will be crushed on site with the resulting aggregate being used as part of the hard-core fill for the car parking and circulation pavement areas.

Wood material generated as part of the site clearance will be minimal and will be source segregated for subsequent separation and recovery at a remote facility.

7.1 HAZARDOUS WASTES

It is not anticipated that there will be any need for hazardous waste on-site, however if required, the management of hazardous waste will comply with current legislation:

- The Waste Management Acts (WMA) 1996 to 2005
- Waste Management Regulations 1998.
- Hazardous waste which may be produced or encountered on site includes:
- Soils contaminated with waste oils or fuels.
- Waste oils and fuels.
- Used aerosol containers

Hazardous wastes will be kept separate from other C & D waste materials in order to avoid further contamination. Hazardous wastes will be stored on site in suitable receptacles for subsequent separation and disposal at a suitably permitted remote facility. Other C & D waste materials will be collected in receptacles with other mixed C & D waste materials for subsequent separation and disposal at a remote facility. Packaging will be source segregated for recycling and return to the suppliers.

Excavation soil and C & D waste derived aggregates are considered suitable for certain on-site construction applications. It is proposed that the quantities listed in Table 3, corresponding to all C & D waste arising from the project, will be used within the works.

List of Waste (EWC Code)	Waste Type (description)	Volume of Waste Generated (Est tonnes)	Waste Exported Off Site (Est tonne)	Waste Imported On Site (tonne)
17 05 04	Soil & Stone		0	5000
17 05 01	Concrete	250	250	none
17 01 07	Masonry	100	100	none
17 01 01	Wood	100	100	none
17 02 03	Plastic/Packaging	10	10	none
17 04 05	Iron & Steel	50	50	none

Table 2 Proposal for Beneficial Use of C & D Waste On-site

Any waste materials resulting from excavation work that cannot be reused on site will have 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 Permit. Accordingly, it may be necessary to arrange some of the following waste authorisations specifically for the Project:

Waste will be segregated on site. The C&D WSA will have skips and receptacles for all recyclable wastes. The appointed waste contractor will collect and transfer the recyclable wastes as receptacles are filled. The non-recyclable waste will be transferred by an authorised waste collector to an appropriate facility. Numerous waste contractors in the Kerry region carry out this operation.

A successful C&D Waste Management Plan is largely dependent on how readily it can be integrated into normal site operations by the person responsible. It is recognised that the plan should not be obstructive to site operations and the construction programme by placing the responsibility of construction waste management with the Manager, all reuse, recycling, wastage, and necessary disposal can be monitored as close to the source as possible. An Environmental Representative from each Works Sub-Contractor will also be nominated responsible for all waste management in their own operations. In this way, it is possible to identify where the greatest material wastage occurs, with a view to implementing better management both in this and future projects.

The site Construction Manager will be designated as the Responsible Person and have overall responsibility for the implementation of the on-site C&D WMP. 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 nominated Environmental Representative from each sub-contractor company on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the C&D WMP are performed on an on-going basis.

7.2 BEDROCK, BLOCK & CONCRETE

The majority of the C&D waste will be clean, inert material and it is proposed to reuse it for construction purposes where possible. If bedrock is encountered during excavations, it will either be crushed on-site and used for infill during construction or be removed from the site by appropriately permitted waste collectors. Rock recovered from the site will be recovered at an authorised site locally.

7.3 SOIL/SUBSOIL

Excess inert soils and sub-soils excavated that is not required for use as fill on site will be recovered off-site. Soil will only be removed by authorised waste collectors to an authorised site. Any fill material excavated at the site, which is deemed to be contaminated (i.e., non-hazardous or hazardous) will be stored separately to the inert material, sampled and tested, in order to appropriately classify the material as non-hazardous or hazardous in accordance with Council Decision 2003/33/EC10, which establishes the criteria for the acceptance of waste at landfills before being transported to an appropriately authorised facility by permitted contractors.

7.4 PLASTIC

As plastic is now considered a highly recyclable material, much of the plastic generated during construction will be diverted from landfill and recycled. The plastic will be segregated at source and kept as clean as possible and stored in a dedicated skip.

7.5 TIMBER

There will be timber waste generated from the construction work as off-cuts or damaged pieces of timber or from the demolished buildings. Timber that is uncontaminated i.e., free from paints, preservatives, glues etc, will all be recycled. It will be collected on-site in a designated area, and collected by a timber recycling company, or a recycling company that will pass it on to a timber recycling company. Such companies shred the timber and use it in energy recovery or for manufacture of wood products or for landscaping woodchips etc.

7.6 SCRAP METAL

Steel is a highly recyclable material and there are numerous companies that will accept waste steel and other scrap metals. A segregated skip will be available for steel/metal storage on-site pending recycling.

7.7 CARDBOARD PACKAGING

Cardboard packaging can also be recycled. Cardboard will be flattered and placed in a covered skip to prevent it getting wet.

7.8 PLASTERBOARD

Waste gypsum can be recycled into new plasterboard. A skip will be provided for the separate collection of waste plasterboard and collected as necessary.

7.9 TRACKING & DOCUMENTATION PROCEDURES FOR OFF SITE WASTE

The Waste Manager will maintain a copy of all waste collection permits. If waste (soil & stone) is being accepted on-site, a waste docket must be issued to the collector. If the waste is being transported to another site, a copy of the waste permit or EPA Waste Licence for that site must be provided to the waste manager. If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) document must be obtained from Kerry County Council (as this is the relevant authority on behalf of all authorities in Ireland) and kept onsite along with details of the final destination (permits, licences etc). As well as a waste collection docket, a receipt from the final destination of the material will be kept as part of the on-site waste management records. All information will be entered in a waste management system to be maintained on-site

7.10 DISPOSAL OF C&D WASTE

There will be a general skip or receptacle for C&D waste not suitable for reuse or recovery. This skip will include general wet waste (mixed food waste and food packaging), contaminated cardboard, contaminated plastic etc. Workers on the site will be encouraged to recycle as much municipal waste as possible i.e., cardboard, plastic, metals and glass. Prior to removal, the municipal waste receptacle will be examined by wither the foreperson or a member of his/her team to determine if recyclable materials have been placed in there. If this is the case, effort will be made to determine the cause of the waste not being segregate correctly.

7.11 SURFACE WATER PROTECTION MEASURES

All storm water discharge will be directed though hydrocarbon interceptors, & grit sumps.

Then into a storm water attenuation tank which will in turn discharge via a hydro-brake flow control device to the existing sewer network.

A method statement will be implemented for the cleaning and maintenance of the proposed storm drainage system and tank during the operation phase.

The proposed storm network will be inspected following construction to ensure that no cross connection between the proposed foul and storm network exists.

The storm drainage system will be cleaned appropriately and inspected prior to being fully commissioned i.e., before being allowed to discharge to the existing stream network.

7.12 DEMOLITION & CONSTRUCTION PHASE DRAINAGE MANAGEMENT.

There is no demolition required as part of the development.

7.13 ASSIGNMENT OF RESPONSIBILITIES

A Site Manager shall be designated as the C & D Waste Manager and have overall responsibility for the implementation of the Project C & D Waste Management Plan. The C & D Waste Manager will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan. At the operational level, Senior Foreman from the main contractor and Site Foreman from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Project C&D Waste Management Plan are performed on an on-going basis.

7.14 TRAINING

Copies of the Project C&D Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project C&D 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 Project C&D Waste Management Plan. Posters will be designed to reinforce the key messages within the Project C&D Waste Management Plan and will be displayed prominently for the benefit of site staff.

7.15 WASTE AUDITING

Havenfalls Ltd will be responsible for the development and the implementation of the construction and environmental management plan and monitoring/mitigation measures. The implementation and monitoring (including Roles & Responsibilities) associated with the proposed development will be detailed in the final CEMP.

The C&D Waste Manager shall arrange for full details of all 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 to the requirements of Table 4 and ensure full traceability of the material to its final destination.

Details	Particulars
Name of Project of Origin	Haven Falls Limited
Material Being Transported	Record of material type
Quantity of Material	Record the quantity in tonnes (use three place decimals)
Date of Material Movement	Record the date
Name of Permitted Carrier	TBC
Material Destination	TBC
Proposed Use	TBC

Table 3 C & D Waste Details to be Included in Transportation Dockets

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 4 below:

Material	Estimated Quantities	Units	Associated Costs
Quantity of Waste MATERIAL			
Purchase Costs i.e. Import Costs			
Material Handling Costs			
Material Storage Costs			
Material Transportation Costs			
Revenue from Material Sales			
Material Disposal Costs			
Material Treatment Costs			
Total Waste MATERIAL Management Costs			
Unit Waste MATERIAL Management Cost			

Table 4 Standard Record form for Costs of C & D Waste Management

A separate table is required to be compiled in respect of each waste material replacing "MATERIAL" with the relevant item. Final details of the quantities and types of C & D Waste arising from the Project will be forwarded to Cork County Council Environmental Department.

7.16 TRAFFIC

As the area is situated remote from Residential areas, traffic is not expected to cause a nuisance to local residences. Havenfalls Ltd are experienced builders with a history of completing residential developments in built up areas including their recently completed development in Tower-100 units (Cork) as well as Annacotty (Limerick), Tallagh (Dublin). Movement of vehicles to/from the site will be confined to the working hours permitted in the planning conditions. There are 1No proposed access points to the site and these are as follows:

To the south of the site which will be used for all deliveries. The site will directly abut a public road suitable to act as a construction access during the construction phase. The contractor will maintain the existing road surface and provide traffic management when required to avoid traffic congestion on the public road.

The proposed construction traffic generated by the development shall be broken into 3No sections.

Excavated soil material being taken from site.

Construction Deliveries i.e. concrete and blocks etc.

Staff traffic.

7.17 EXCAVATED MATERIAL

The site is primarily a greenfield site where and will involve construction traffic. Depending on the rate of completion of the east-west LIHAF Road being developed by Cork County Council, access to the site will either be along that, or perhaps via the laneway to the north of Nordic Business Park.

7.18 CONSTRUCTION DELIVERIES

All construction deliveries will be via the proposed new entrance to the site. This new entrance will be formed after any initial demolition works and prior to the commencement of the construction phase.

7.19 STAFF

All construction staff will be entering via the proposed new entrance to the site. A compound will be formed within the site to avoid staff parking on the public road.

8.0 TRAFFIC CONTROL MEASURES

Generally – We shall ensure that all site fencing shall in no way impinge on the current road widths to avoid any potential 'bottlenecks' in the region of the site.

8.1 SITE DELIVERIES.

We propose that the gates to the site are set back 9.000m and shall be 7.000m wide. This shall allow for trucks to park in the entrance off the road to avoid disruption of traffic flows on the road. The entrance area itself shall be splayed as shown on the attached drawing to allow for all vehicles leaving the site to have an adequate field of vision when leaving the site. We also propose the erection of a convex mirror on the hoarding on the left-hand side of the entrance, which shall allow all drivers to have a clear view of all traffic coming from the right when exiting the site. We propose that all delivery checks for vehicles entering the site shall be carried out inside the hoarding gates, this will allow for the area outside the gates to always remain free for other deliveries.

8.2 MATERIAL STORAGE

All material shall be stored within the site storage area within the hoarding as shown on the attached drawing.

8.3 ROAD OPENINGS

For any road openings, a road opening licence will be applied for, in which the traffic management proposal specific to that opening will be outlined and agreed with the Council.

8.4 AIR

The principal sources of air emissions, particularly suspended particulates, likely to occur from the construction site include:

- Site Clearance
- Movement of construction vehicles within the site during dry windy weather.
- Soiling of the public road with subsequent dust emissions caused by passing traffic and / or in dry windy weather.
- Excavation and loading of trucks with C&D waste material

Dust emissions arise when an operation causes particulate matter to become airborne. This airborne dust is then available to be carried downwind from the source. The amount of dust generated and emitted from a working site and the potential impact on surrounding areas varies according to the following:

- The type and quantity of material and working method
- Climate/local meteorology and topography i.e., wind speed and direction

Potential dust particles generated from site operations within the site are expected to comprise of larger dust particulates (i.e., above 30 µm). These site operations include demolition works, excavation, temporary stockpiling, loading, and hauling of C&D waste. The maximum distance such particulates are likely to travel is 30 to 60m. Smaller dust particles will remain airborne for longer thus dispersing over a wider area. Particulates below 30 µm-diameter, and particularly below 10µm, typically only form a small fraction of dust emitted from construction sites.

The non-respirable dust fractions (i.e., >10 µm) may generate a cumulative long-term impact if dust deposition outside the site boundary continues over a period without amelioration (e.g., staining of vegetation). Short-term impacts may occur from visible dust clouds being generated during windy dry weather events.

Respirable dust fractions (i.e., < 10 µm) potentially effect respiratory and cardiovascular systems. S.I. No. 271 of 2002 relating to limit values for particulate matter in ambient air indicates a 24-hour percentile (90.4%) limit value of 50µg/m3 PM10.

8.5 MITIGATION MEASURES - AIR

To avoid, reduce and / or mitigate potential dust nuisance, the contractor will introduce air emission abatement measures as follows:

Any temporary site road will be surface dressed with crushed rock.

In the event that the public road becomes soiled, the contractor will have available a sweeper to remove soil and debris promptly.

Work areas will be sprayed during periods of dry weather in order to suppress dust migration from the site.

Stockpiles will be sprayed during periods of dry weather in order to suppress dust migration from the site.

A speed limit of 15kph will be enforced at the site.

8.6 NOISE

The development site is located away from residential zones. Background noise levels are expected to be elevated during daytime hours. To the south of the site, there is residential housing fronting onto the Main Road. The principal sources of noise emissions from the site will be:

During the demolition phase, when heavy plant will be used to knock buildings and load trucks with C&D waste material.

During piling works.

General construction activity, including HGV traffic to / from the site, use of power tools etc.

8.7 MITIGATION MEASURES – NOISE

To reduce the impact of noise emissions the following work practices will be employed:

Working hours will be i.e., 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 on Saturdays. There will be no construction activity on Sundays or bank holidays.

During piling works a vibratory pile system will be employed to reduce noise emissions.

All site plant will be maintained in good working order and exhausts will be fitted with mufflers and unnecessary revving of engines will be avoided.

A speed limit of 15kph will be enforced at the site