

Housing Development – Courtstown, Little Island, Co. Cork

Construction, Environmental & Waste Management Plan

Prepared For:

Ruden Homes Ltd.

Prepared By:



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1 Overview

The Construction, Environmental & Waste Management Plan (CEWMP) will be a dynamic document and will be an everyday reference guide and Site personnel will use it to avoid, reduce and or compensate for the environmental impacts of the project work.

The CEWMP will firstly examine the existing site along with the developments that are proposed for this location. The CEWMP will incorporate a Construction, Environmental & Waste Management Plan as well as the Construction Traffic Management Plan.

This Construction Traffic Management Plan should include:

- Proposed timescale and scheduling of works including schedule of truck movements.
- Agreed haulage routes.
- An agreed protocol to be followed by HGV drivers.
- Allowable operational times for the HGV's on the road network

The CEWMP should include measures for controlling pollutants and dealing with surface water runoff during the construction works. The CEWMP will also outline the details in relation to sustainable/environmental measures to be implemented on site to prevent any adverse impacts on the surrounding environment. Accordingly, this CEWMP identifies the main objectives for the managed procedures which are required to ensure the construction and demolition related activities on the subject site are executed in a safe and controlled manner and to minimise disruption and impacts on the amenities in the area.

The Noise, Dust and Vibration monitoring outlined in this document is to ensure the construction environment is monitored and managed to minimise any impact to the development's neighbours.

A final CEWMP will not be prepared until any planning conditions associated with the proposed development are notified. Further, detailed methodologies for some mitigation measures are to be refined following appointment of relevant contractors.

1.1 Primary Contacts

The primary contacts in relation to operational matters; and environmental mitigation measures are detailed below.

Contact	Contact Details	Position / Role
Applicant/Developer		
John Deane Ruden Homes Ltd.	e. info@rudenhomes.com t. (021) 4373643	Developer/Project Manager
Michelle O'Shea McCutcheon Halley	e. moshea@mhplanning.ie t. (021) 4208710	Planning Consultant
Damian O'Sullivan Engenuiti Consulting Engineers	e. damian.osullivan@engenuiti.ie t. (021) 2376070	Architect
George Dundon Brady Shipman Martin	e. georgedundon@bradyshipmanmartin.com t. (021) 2425620	Landscape Architect
Paul Matson MMOS Consulting Engineers	e. pmatson@mмосengineers.com t. (021) 4317608	Engineer
Gearoid Slattery Horizon Engineering Consultants Ltd.	e. gearoidslattery@horizonengineering.ie t. (021) 7011111	Lighting Consultant
Ken Manley MHL Consulting Engineering	e. kmanley@mhl.ie t. (021) 7011111	Traffic Consultant
Avril Purcell Lane Purcell Archaeology	e. avril@lpa.ie t. (021) 4808155	Archaeologist Consultant

2 Introduction

2.1 Site Location

Ruden Homes have proposed to develop a residential development at Courtstown, Little Island, Co. Cork. The site can be seen in Figure 2-1.



Figure 2-1 – Site of Proposed Development

2.2 Existing Site

The subject site is located in Courtstown, Little Island, approximately 8.5km to the east of Cork City Centre and approximately 3.5km to the east of the Jack Lynch

Tunnel. The site is located approximately 1km southeast of East Gate Village which is the designated neighbourhood centre for Little Island. The facilities and services at the neighbourhood centre currently include a small convenience retail store, bank, pharmacy, and restaurants. The Little Island Train Station is located approximately 2km northwest of the subject site.

The area surrounding the site is characterised by a mix of uses including residential, industrial, recreational/leisure and agricultural. The lands immediately adjoining the site to the north comprise residential development and to the west is Harbour Point Golf Course. The lands adjoining the site to the immediate south and east make up the wider landholding and are currently undeveloped.

2.3 Proposed Works

The development will consist of:

- The construction of 172 no. residential units to include 146 no. dwelling houses (with 83 no. dwelling houses to include the option for constructing a ground floor extension to the rear); 6 no. duplex units; and 20 no. apartments.
- Provision of 1 no. creche and 4 no. commercial units.
- Upgrading of the existing vehicular access to the site and the creation of a signalised junction on Ballytrasna Part Road (L-2985-0), including footpaths, cycle lanes and pedestrian crossing points, to facilitate access into the site,
- The provision of a new distributor road, including footpaths and cycle lanes, connecting the proposed residential development with Ballytrasna Park Road.
- All associated infrastructure and ancillary development works to include the provision of roads, footpaths and cycle lanes as well as the provision of vehicular connections to adjoining lands with pedestrian/cycle facilities; Proposed diversion and undergrounding of the existing 10KV overhead electricity line and associated poles traversing the site; landscaping & amenity areas, lighting, drainage and services connections; bicycle and car parking; bin storage; and boundary treatments including fencing and landscape buffer of mixed native hedge planting along the eastern boundary of the site.

The foul and storm water sewer network will be established for the site also. The foul sewer will be connected via the local sewage network to the Carrigrennan Wastewater

Treatment Works (WWTW), which discharges treated effluent to the Lee Estuary, east of Cork City. All stormwaters will be drained through main sewers to 2 attenuation tanks on site. It will then proceed to the east of the site and where it will be released to one of the Cork County Councils sewers located on the public road.

2.4 Construction Details

The main objective of this CEMP is to minimize the impact of the construction process on the receiving environment and ensure all associated construction/demolition waste is minimised and reused, recycled, or removed to an authorised waste facility. Included below are the main elements and tasks involved in the construction of the site and the management process of same.

Main tasks to be completed on site include:

- Site clearance including the removal of any existing scrub/vegetation that were not proposed to be retained as part of the development.
- Set up compound.
- Secure the construction site and erect signage.
- Excavation to formation level of site plots (storage of any excavated material for reuse on site).
- Storage of excavated soil for landscaping or removal of additional soil/rubble to a licensed/operator land fill.
- Provision of services (including stormwater attenuation tank, foul sewer connection and outfall) and the diversion and undergrounding of the existing MV(10KV) ESB electrical cables.
- Construction of vehicular access to provide access to the site which comprises.
 - Clearing and excavating the area where the road will be constructed.
 - Machinery mounts soil over the area where the future pathway will run. The surface is then levelled and smoothed and underground utilities such as storm drains are laid. Location of public lighting is planned prior to construction.
 - The surface is fine graded by levelling it according to structural pans.
 - The aggregate base is laid, which is made up of crushed stone or gravel. Concrete kerbs, footpaths and drains are constructed/constructed straight after the gravel is placed on the surface and the road is fine graded again. Electrical conduits for the streetlights are installed behind the new kerbs.
 - Once the gravel has been distributed evenly, the asphalt is poured in layers. Before the last layer of asphalt is poured, the footpaths and drains have to be finished.
 - The road markings are applied to the road surface and appropriate road signs are placed at the places specified/agreed by Council.

- Construction of proposed dwelling houses, apartments and childcare facility and completion of landscaping.

The development will be split into 4 phases, phases 1, 2, 3 and 4. These phases are highlighted in Engenuiti Site Layout Plan - Construction Phasing Plan Drawing Ref. No. *10277-PL-010*. The phasing plan split is as follows:

1. Phase 1 will consist of 53 no. dwellings at the north of the site.
2. Phase 2 will consist of 48 no. dwelling houses. *It must be noted that during Phase 2 the ESB line must be relocated and buried prior to the commencement of Phase 3.*
3. Phase 3 will consist of 11 no. dwelling houses, 20 no. apartment units, 4 no. commercial units and the creche.
4. Phase 4 will consist of 40 no. dwelling houses.

Note:

All phases will include for ancillary site, road, services and landscaping works.

The developer proposes to complete approximately 1 phase per year would have the whole scheme complete in approximately 4 years. The water and wastewater requirements for the development will be in line with this phased construction programme.

3 General Construction Management details

The following works are required to be undertaken prior to the commencement of construction works:

1. All documentation relating to Health & Safety to be submitted to PSDP for approval.
2. The identification of existing services on site and the diversion / protection or removal of same
3. The Provision of Hoarding, Site Access, Security and Welfare Facilities.

3.1 Health & Safety

The contractor shall submit a health and safety method statement for the project prior to commencement on site.

It is envisaged that the contractor will act as Project Supervisor Construction Stage. A Project Supervision for the Design process will be appointed by the client. MMOS Engineers are the Project Engineers. All temporary works designs will need to be submitted to MMOS so that they can be co-ordinated to the PSDP.

3.2 Existing Services

The contractor shall identify all existing services above and below ground.

The Contractor shall carry out a detailed site survey so as to determine the full extent and exact locations of services within the construction area.

The Contractor shall protect drains, manholes, gullies, vent pipes and fittings still in use and ensure that they are kept free from debris at all times. He shall make good any damage arising from demolition works and leave them clean and in working order at completion.

The Contractor and all persons performing work shall comply with all safety rules and regulations and shall take all necessary precautions to assure safe working conditions during the works. The Contractor shall use all necessary surveying equipment to locate underground cables and carry out necessary precautions when digging around existing live cables.

3.3 Hours of work

To moderate impacts on the surrounding area and in order to mitigate noise levels emanating from the site, all site development and building works will be carried out only between the hours of 08.00 to 18.00 Mondays to Fridays inclusive, between 08.00 to 16.00 on Saturdays and not at all on Sundays and Public Holidays. Any deviation from these times will be submitted to the County Council for approval.

3.4 Construction Traffic Management

3.4.1 Site Access & Parking

Access to the site will be from the Ballytrasna Park road that runs across the site entrance. The site will then be accessed through the entrance which will be located on the new vehicular access road running along the eastern boundary of the site.

As Ballytrasna Park Rd. is used to access live residential and industrial properties, access / egress to the site will need to be carefully coordinated and managed with the local residents. This will need to be carefully outlined by the contractor in the Construction Stage plan.

Site parking will be provided on site at a designated area next to the temporary services that will be installed on site. This area will be segregated from the active site.

3.4.2 Site Security

The site shall be kept secure at all times with signage indicating that it is a building site with associated dangers in accordance with the Health and Safety Authority Regulations.

The Contractor shall provide all necessary security during the progress of the works and shall be responsible for any damage or injury arising from insufficient security.

3.4.3 Signage and Fencing

Signage will be erected in advance to warn other pedestrian and road users of a construction site ahead. These signs will be checked and cleaned regularly so that they are maintained in a good condition. Signage will also be erected along emergency vehicle routes, and critical areas such as assembly points and means of escape will be kept clear.

Fencing will be introduced around the site with a specific emphasis on the fencing at the northern side of the site where access from the public is most likely.

3.4.4 Cleaning of Roads

For the duration of the construction period the contractor will be required to install a wheel wash at the entrance to the site. This will wash the wheels and undercarriages of all vehicles leaving the site to ensure no debris leaves the site on vehicles. Adequate provision will be made on site for drainage of this area. All truck drivers must also inspect their vehicles before they leave the site for stones caught in their tyres or any other debris. The public roads will be monitored throughout the works and a road sweeper will be employed when required for the duration should the roads become dirty. The developer will liaise with the local authority and all adjoining owners / residents in respect of the timing and movement of the road sweeper activity.

3.4.5 Deliveries on Site

Delivery of materials will be organised by the contractor so that deliveries are minimised at the morning or evening periods when traffic is at peak flow on the public road.

4 Control of Water Pollution on Site

This section of the report sets out the potential sources of water pollution and other environmental issues that may arise during the construction works. Methods are proposed and discussed for controlling pollution and water runoff from the site during the construction works. Reference is made during this section to CIRIA C532 *Control of water pollution from construction Sites*.

Specific details will be provided by the contractor on development of the detailed Construction Management Plan at construction stage to be agreed in full with the Council's Environmental Department where necessary.

4.1 Sources of Water on the construction site.

The following are the sources of water that are likely or that may be encountered during the construction works.

- **Rainwater:** The primary source of water to the site is rainwater. The anticipated average annual rainfall at the site is anticipated to be in the region of between 800 and 1200 mm annually. The rainfall amounts vary by the season and can be as much as 50 mm over a 24-hour duration. Heavy rainfall can have a significant effect on the site and can cause flooding and the overwhelming of site drainage systems. Flooding can have an effect on stored site materials that would not normally pose a risk. The contractor will be required to ensure that materials are therefore properly stored on site and to plan site activities to ensure that works such as heavy excavation, drainage and foundation works are postponed during adverse weather conditions.
- **Surface Water:** Surface waters tend to include watercourses and waterbodies. In the case of the proposed development site, there are not any water courses or waterbodies that should be of concern.
- **Groundwater.** The contractor will be required, in advance of and during site establishment, to undertake a series of trial holes to establish the ground water levels. However, it is not thought at this juncture that the works will be below ground water levels.

4.2 Potential Sources of water Pollution

The following are a list of potential water pollutions that could arise on the construction site.

- **Suspended Solids:** The contractor is to employ measures to ensure that water pollution does not arise as a result of suspended solid pollution. Sources of suspended solid pollution include, excavation, earth stockpiles, plant and wheel washing, build-up of mud on site roads. Good practice construction measures are proposed in the following sections that the contractor will be required to employ to ensure that suspended sediments from the above potential sources do not enter the watercourse.
- **Oils and Hydrocarbons;** Oils are a potential source of pollutants on a construction site. Diesel, lubricating oil, fuel, petrol, and hydraulic fluids are used quite readily on construction sites for various types of machinery and refuelling and maintenance are required regularly on sites. The contractor will need to employ good practice measures to prevent these potential pollutants entering the water course. These measures will include bunded areas for the storage of fuels, regular maintenance of machinery to ensure that no leakages occur, measures to protect the site from vandalism and the provision of a designated refuelling area on site or refuelling off site.
- **Concrete and Cement Products;** It is important the cement products are carefully stored to withstand various weather conditions such as heavy rainfall and high winds to prevent run off and dust pollution. Concrete products can cause contamination during wash down of the trucks which can cause a large volume of uncontrolled runoff. Good practice measures can be employed on site to prevent such uncontrolled runoff by the use of a special impermeable bunded slab with a collection point and siltation for such operations.

4.3 Surface Water Management Techniques.

The contractor will be required to submit proposed methods for managing surface water runoff from the site during the construction operations. The following operations will require particular attention.

- (i) Excavations for foundations works.

Excavations works will require works below ground level and to control the groundwater in the areas being excavated the contractor will require to isolate the area by digging trenches to the perimeter of the foundation area with suitable falls and sumps. The perimeter drain in an open excavation such as a basement excavation should include French drains as per the following extract from CIRIA C532.

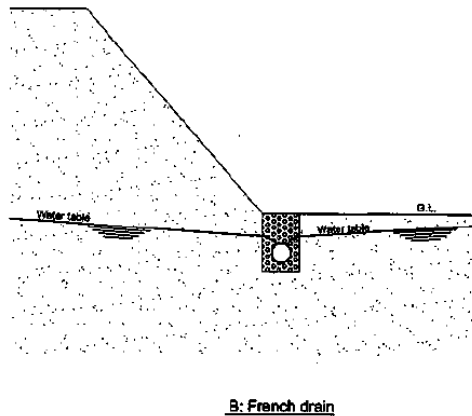


Figure 6.42 Schematic section showing water control methods

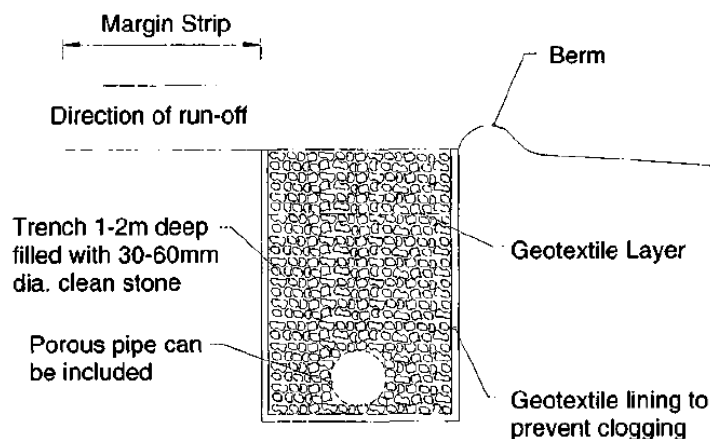
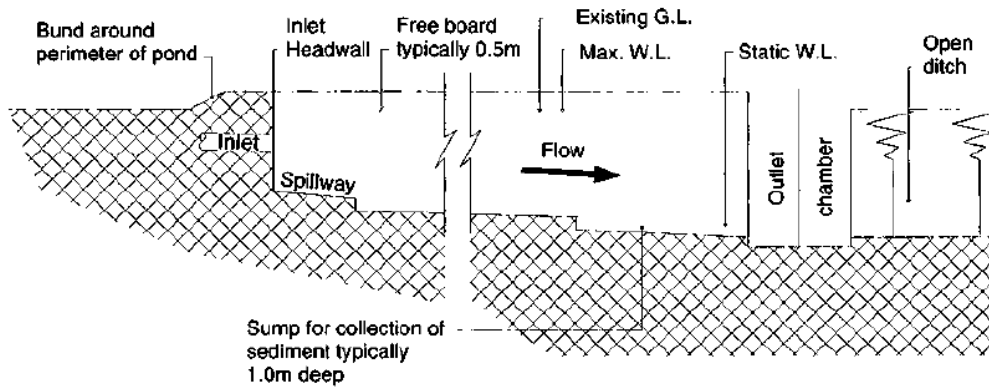


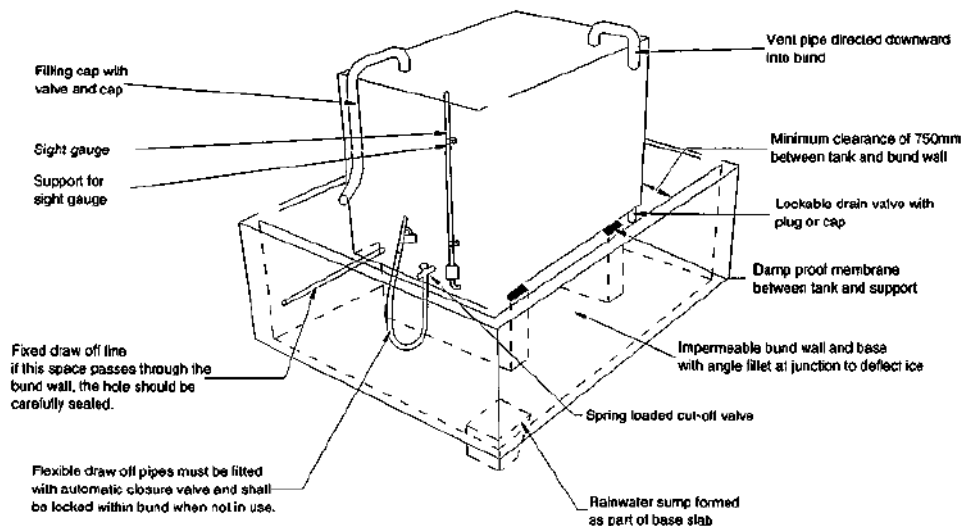
Figure 6.43 Typical filter drain detail

Discharge of ground water will be via silting ponds where suspended solids can be removed, and the water quality can be monitored. The following extract from CIRIA C532 provides a cross section through a typical silting pond.



(ii) Oil and Fuel delivery points.

As noted in section 3.2 above a designated fuel transfer area should be provided on site and this is typical good practice on well managed construction sites. The contractor will be required to install an impermeable paved and bunded area that is capable of handling and intercepting a fuel spillage. All tanks should be fully bunded and placed on a firm and secure foundation as per the following sketch from CIRIA C532.



(iii) Formwork and concrete operations.

Concrete should always be placed in a controlled method to prevent spillages as is good construction practice. Where possible concrete should be placed using a concrete pump. As noted above it is important that the machinery is well maintained.

At the delivery and wash down point it is important that measures are employed to prevent spillages from concrete delivery trucks contaminating the ground.

4.4 Construction & Operational Stage - Effluent

During the construction stage, waste-water/foul effluent will be managed and controlled at the temporary site compound through the use of portaloos and welfare units with storage tanks, where sanitary waste will be removed from site via a licenced waste disposal operator.

During the operational stage, waste-water/foul effluent from the proposed development will be collected via new sewer infrastructure at the site that will connect to the existing/new public waste-water sewer network. This will ultimately discharge to the wastewater treatment plant at Carrigrennan, Little Island, which was constructed as part of the Cork Main Drainage Scheme.

5 Environmental & Waste Management Plan

5.1 General

The contractor will be required to prepare a specific Demolition waste management plan & Construction waste management plan for the site and submit prior to commencement of the works. The following requirements are noted.

Details of the Wastes to Be Produced (Incl. Estimated C&D Surpluses/Deficits)

During construction of the proposed development, there will be construction waste generated, such as off-cuts of timber, oversupply of materials and damaged or broken concrete blocks and tiles, along with packaging materials such as cardboard, plastic and polystyrene.

Main C&D Waste Categories

The main non-hazardous waste streams that will be generated by the construction and demolition activities at the site are:

- Stones/bedrock, topsoil and subsoil
- Concrete, brick, tiles and ceramics
- Asphalt, tar and tar products
- Plasterboard
- Scrap Metal
- Cardboard (packaging)
- Plastic (wrapping, packaging)
- Waste wood
- Paper

The hazardous waste streams may include the following;

- Batteries
- Wood Preservatives
- Oils/Fuels from machinery & equipment

The European Waste Code (EWC) Classification for each waste stream is presented in Table 5.1.

Table 5.1: Waste types and EWC Classification

Waste Material	EWC Code
<i>Non-Hazardous</i>	
Concrete bricks, tiles and ceramics	17 01 00
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and tarred products	17 03 00
Metals (including their alloys)	17 04 00
Soil, stones and dredging spoil	17 05 00
Insulation materials and asbestos-containing materials	17 06 00
Gypsum-based construction material	17 08 00
Other construction and demolition waste	17 09 00
Cardboard	15 01 01
<i>Hazardous</i>	
Asbestos	17 06 05
Batteries	16 06
Wood Preservatives	03 02
Liquid Fuels	13 07

Estimated Waste Arising & Proposals for Reduce, Reuse & Recycle

The EPA has produced figures for the C&D waste recorded in the National Waste Database. This included a percentage breakdown of each waste type in the C&D stream.

Table 5.2: Breakdown of Waste Materials generated at a typical site

Waste Types	%
Bedrock, Soil & Stones	51
Concrete, Bricks, Tiles, Ceramics, Plasterboard	39
Asphalt, Tar and Tar products	2
Metals	2
Other	6
Total Waste	100

As Table 5.2 shows, a large percentage of the waste at the site will be soil and stones. The excavated material from the site will be reused on site if possible. In the event of the material being used off site options include land remediation/infill on other sites in the area.

Proposed Uses of Wastes and Surpluses/Deficits from the Site

A temporary segregation bay will be constructed at the site for the duration of the construction and demolition phase of the development. The bay will include segregated areas for recyclable waste streams, such as gypsum (plasterboard), cardboard, timber, concrete/blocks/tiles etc.

As extensive development is being carried out in the vicinity of the site, the possibility of reuse of materials on neighbouring sites will be investigated.

Cardboard

Cardboard will be segregated on site. The cardboard will be flattened and placed in a covered skip or tied and covered, to prevent the card getting wet. A recycling contractor will collect it as required.

Plasterboard

There will be a separate skip for plasterboard at the site. There are a number of specialist contractors that recycle plasterboard, and they will be contracted to address this matter.

Reprocessed gypsum powder, which makes up to 94% of the plasterboard, can be reprocessed into new plasterboard or converted for use in soil conditioners

for the agricultural industry. The paper, which makes up to 6% of the plasterboard, can be reused in various industries.

Soil/Subsoil

Excess excavated soil will be disposed of off-site. Soil will be removed and disposed of by contractors licensed under the Waste Management Act of 1996, the Waste Management (Permit) Regulations of 1998 and the Waste Management (Collection Permit) Regulations of 2001. This material will be used for fill material on other sites, or capping purposes on site, e.g., at a landfill.

Plastic

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

Timber

There will be timber waste generated from the construction work as off-cuts or damaged pieces of timber. Timber that is uncontaminated, i.e., free from paints, preservatives, glues etc, will all be recycled. It will be stored on site in a designated skip and collected by a recycling contractor. Such companies shred the timber and use it for manufacture of wood products or for landscaping (wood chips etc).

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 storage on site pending recycling.

Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site.

Any contractor who takes waste materials from the site will be compliant with the Waste Management Act of 1996 & 2001 and also the Waste Management (Collection Permit) Regulations of 2001, i.e., any contractor removing waste from the site will have a waste collection permit issued by Cork Co Council. The foreman on the site will have a copy of the waste collection permits.

All information will be entered in a waste management system kept on the site; this will be maintained by the appointed building contractor. This will maintain accurate records on the quantities of waste/surpluses arising and the real cost (including purchase) associated with waste generation and management, locations for disposal and recycling of waste and the permitted contractors used in the process. This will also be in accordance with Section 5 of this Appendix.

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 polystyrene, contaminated cardboard, plastic etc. Workers on the site will be encouraged to recycle as much municipal waste as possible, i.e., cardboard, plastic, metals and glass. General wet waste will be presented separately for recovery. Food waste will be segregated with separate receptacles for collection and disposal.

Prior to removal, the municipal waste receptacle will be examined by either the foreman or a member of his team to determine that recyclable materials have not been placed in there. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly.

5.2 C&D Waste Management Procedures

Sorting/Segregation Arrangements for Individual Materials

C&D waste materials will be stored separately on site, i.e., there will be a Central Waste Storage Area (CWSA) with specific receptacles or bays for each material taken from the demolition and construction phase.

Bins or skips used on site will be transportable to the CWSA. A forklift will be used to transport skips and containers around the site. By having segregated wastes at source, it can be arranged that a waste contractor/recycler will collect the materials, as necessary.

Details of Transportation and Reception Arrangements for Movement of Materials to Other Sites

The waste materials will be stored in the specifically designated compound. All waste collected from the site will be by a permitted waste contractor, under the Waste Management (Collection Permit) Regulations 2001.

The contractor will provide the waste manager on site with documentation of the waste to be removed and a copy of the waste collection permit. Prior to the waste leaving the site, the waste manager will have documentation to show where the waste is being taken to, and that the facility is licensed to accept the particular waste. A receipt will be issued for each load that leaves the site.

Some wastes may be transported to another site for reuse on the site. The manager will be in contact with other sites to ensure that as much waste is reused as possible, such as concrete for fill purposes etc.

All wastes leaving the site will be placed in appropriate containers. Any concrete, soil, gravel, or broken stone transported off site will be covered to prevent dust or particle emissions from the load.

Training Provisions for Waste Manager and Site Crew

One of the construction team or the foreman will be appointed as a waste manager to ensure commitment, operational efficiency and accountability.

The waste manager will be given responsibility and authority to select a waste team if required, i.e., members of the site crew that will aid him/her in the organisation, operation and recording of the waste management system on the site.

The waste manager will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the waste manager to delegate responsibility to sub-contractors where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and salvage on site.

The waste manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for the waste management on site.

He/she will be also trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on

site and know how to implement the construction and demolition waste management plan.

The training of the site crew is the responsibility of the waste manager. A waste training program will be organised. A basic awareness course will be held for all site crew to outline the C&D waste management plan and to detail the segregation of waste materials at source. This may be incorporated into the induction course, or safety-training course.

This basic course will describe the materials to be segregated, the storage methods and the location of the waste storage areas. A subsection on hazardous wastes will be incorporated and the particular dangers of each hazardous waste will be explained.

5.3 Record Keeping

Records will be kept for each waste material, which leaves the site, either for reuse on another site, recycling or disposal. A system will be put in place to record the construction waste arising on site.

The waste manager or a member of his team will record the following;

- Waste taken for Reuse off-site (i.e., for capping of landfill cells or at another site)
- Waste taken for Recycling.
- Waste taken for Disposal
- Reclaimed waste materials brought on-site for reuse

For each movement of waste on- or off-site, the waste manager will obtain a signed docket from the contractor, detailing the weight and type of the material and the source and destination of the material.

This will be carried out for each material type. This system will also be linked with the delivery records. In this way, the percentage of construction waste generated for each material can be determined.

The system will allow the comparison of these figures with the targets established for the recovery, reuse and recycling of construction waste and to highlight the successes or failures against these targets.

5.4 Outline Waste Audit Procedure

The appointed waste manager on site will be responsible for conducting a waste audit at the site.

A review of all the records for the waste generated and transported on- or off-site will be undertaken. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained.

A summary report will be prepared and compared with the established recovery/reuse/recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Waste management costs will also be reviewed. Ongoing consultation with waste contractors and the Cork Co Council will be pursued in order to ensure that the best practicable option is being followed for waste management on site.

Upon completion of the project, an audit will be prepared, summarising the ongoing progress and the total recycling/reuse/recovery figures for the development. This audit may be reviewed by the Waste Management section of Cork Co Council.

At least two audits will be carried out during construction to ascertain if measures in place are addressing demands and to allow for corrective measures in waste handling and management to be addressed with appropriate corrective measures.

5.5 Prevention of Invasive Species

In relation to the spread of **invasive species** a walkover of the site was conducted, and **no invasive species were noted within the site of the proposed development**. To further ensure that no invasive species are imported on to the site during construction stage, comprehensive bio-security measures will be employed during the construction phase to mitigate the introduction and spread of invasive species and will include the following:

- Adopting a precautionary approach. Do not release or plant until you have a clear understanding of the situation.
- Carrying out risk assessments. Due diligence is likely to include assessing the risk of an offence happening, establishing what to do to avoid it happening and acting according to best practice to prevent it happening.
- Ensure detailed checks and risk assessments are carried out for non-native species within initial site feasibility assessments and surveys.
- Where a non-native species is identified as a risk of being introduced, spread within, or moved off site, ensure mitigation measures are considered at the early planning stage, and ensure enough time is given to implement them.
- Where a species requires long-term management (e.g., Japanese knotweed), ensure a site management plan is put together that addresses all issues associated with it.
- Nominate a designated Clerk of Works/Project Manager to manage the issue of non-native species on your site from an early stage.
- Brief all contractors fully, and ensure all staff are aware of what the species looks like, and the issues associated with it. This could be done through 'tool-box' talks or within site introductions. Everybody working on site must understand the role and authority of the Clerk of works managing the issue of the non-native species.
- Record any areas that are contaminated/infested with non-native species within your management plan, isolate them with fencing and put-up restricted access signs.
- Maintain good site hygiene in general but especially when dealing with any non-native species.

- Where contaminated soil, materials or water are located, signage should be erected to indicate them.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned where appropriate to prevent spread.
- Tracked vehicles will not be used within any discovered area of infestation (if such a scenario arises during construction).
- All vehicles leaving the infested area and / or transporting infested soil/materials will be thoroughly pressure-washed in a designated wash-down area before being used for other work.
- Where cross-contamination is possible (i.e., from one site to another), consider designating vehicles or machinery to specific sites where possible to prevent spread.
- Material / water left after vehicles have been pressure-washed will be contained, collected, and disposed of appropriately.
- All chemicals used for the control of non-native species (if required) will be stored and used in a responsible manner.
- All wash facilities including wastewater from washing vehicles, equipment or personnel will be managed in a responsible way so as not to not cause harm to the environment.
- If using water on your site for construction purposes or to wash vehicles or equipment, it will be ensured that the source of that water will not inadvertently act as a vector for the transportation of non-native species to/from your site or elsewhere.
- Disposal of contaminated wash water, including all silt and other solids (e.g., plant fragments), will be dealt with in a responsible manner to avoid pollution and to prevent the spread of any non-native species that may be present.
- Where non-native species are known to be within or close to the site, care will be taken not to facilitate the transportation of plant seeds or fragments, animals or eggs on machinery, vehicles or by foot, from one site/river catchment to another. This may require the need for an exclusion zone and/or the use of designated machinery/ equipment on key sites to prevent movement from one site or river catchment to another.
- Vehicles will be inspected before moving them from site to site or off site and provide wash facilities suitable for the machinery you have, if needed, e.g., a

drive through bath or footbaths. You should pay particular attention to caterpillar tracks and where trucks and dumpers are stowed.

The above bio-security measures are based on best practice and will be implemented by Ruden Homes Ltd. during construction to ensure that no invasive aquatic and riparian plant species will be introduced during the construction phase via contaminated machinery and topsoil.

6 Noise, Dust and Vibration

6.1 Noise

The contractor will be required to carry out noise monitoring at defined locations on the boundary on an ongoing basis during the works. The contractor must ensure that construction noise will comply with the requirements of BS5228-1:2009, Code of Practice for Noise and Vibration Control on Construction and Open sites. Noise during construction shall not exceed 65 dB (A), Leq 30 minutes and the peak noise shall not exceed 75 dB (A), when measured at any point off site.

The contractor is to have a point of contact available during the works at all times and if exceedances are recorded, the contractor will be required to adopt alternative construction methodologies and measures to ensure that the limits are complied with.

Noise monitoring will be addressed with the contractor on an ongoing basis by the Engineer and it will be on the agenda at the weekly site meetings.

6.2 Dust

The contractor will require to carry out dust monitoring at three defined locations on the boundary on an ongoing basis during the works.

The contractor will be required to prepare and implement a dust minimisation plan for the duration of the works. Dust control will take on board the recommendations as outlined in Control of Dust from Construction and Demolition Activities (BRE/DTI, 2003). The dust limit is set as 350mg/m²/day as outlined in the TA Luft Guidelines. 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. At all times, the procedures put in place will be strictly monitored and assessed.

The contractor is to have a point of contact available during the works at all times and in the event of dust nuisance occurring outside the site boundary, significant dust producing activities will be immediately terminated and satisfactory procedures implemented to rectify the problem before the resumption of the operations.

In order to ensure that no dust nuisance occurs, a series of measures will be implemented. Site access shall be regularly cleaned and maintained as appropriate. Hard surface areas shall be swept to remove mud and aggregate materials from their surface while any un-surfaced areas shall be restricted to essential site traffic only. Furthermore, any area that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.

Vehicles on site shall have their speed restricted, and this speed restriction must be enforced rigidly. Vehicles delivering or removing material with dust potential shall be enclosed or covered with tarpaulin at all times to restrict the escape of dust.

All vehicles exiting the site shall make use of the wheel wash facility prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads. Public roads outside the site shall be regularly inspected for cleanliness and cleaned as necessary. The roads will be monitored throughout the works and a road sweeper will be employed by the contractor, when required, should the roads become dirty.

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.

Dust monitoring will be addressed with the Contractor on an ongoing basis by the Engineer and it will be on the agenda at weekly meetings.

6.3 Vibration

The Main contractor will be obliged to carry out vibration monitoring at two defined locations on the boundary on an ongoing basis.

The works will be required to comply with BS5228 (2009): *Code of practice for noise and vibration control on construction and open sites- Part 2: Vibration.*

BS5228 recommends that that, for soundly constructed residential property, light commercial buildings and similar structures that are in good repair, a threshold for minor or cosmetic (i.e., non-structural) damage should be taken as a peak particle velocity of 15mm/s at 4 Hz increasing to 20mm/s at 15 Hz and increasing to 50 mm/s at 40 Hz and above for intermittent vibration.

Below these vibration magnitudes, minor damage is unlikely, although where there is existing damage, these limits may be reduced by up to 50%.

The contractor is to have a point of contact available during the works at all times and if exceedances are recorded, the contractor will be required to adopt alternative construction methodologies and measures to ensure that the limits are complied with.

