

**CONSTRUCTION PHASE
WASTE AND BY-PRODUCT MANAGEMENT PLAN**

FOR

**SHANNON HOMES DROGHEDA LTD
FORTFIELD HOUSE
COLPE ROAD
DROGHEDA
CO. MEATH**

RELATING TO A PROPOSED

STRATEGIC HOUSING DEVELOPMENT

AT

MILL ROAD, COLPE, DROGHEDA, CO. MEATH

8th October 2018



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1.0 INTRODUCTION

This document presents the Construction Phase Waste & By-Product Management Plan (CWMP) for the control, management and monitoring of waste associated with the construction of the proposed Strategic Housing Development at Mill Road, Colpe, Drogheda, Co. Meath.

The proposed development consists of a residential development comprising 357 no. residential units, a childcare facility and associated outdoor play area, road infrastructure, a pedestrian bridge over the railway line and associated pathways, all associated open space, cycle and pedestrian infrastructure, services and all other associated development on a site of c. 13.44 hectares.

The 357 no. residential units proposed consist of 169 no. houses, 52 no. duplex apartments and 136 no. apartments.

The proposed Construction Waste Management Plan has been prepared to demonstrate how the Construction Phase will comply with the following relevant legislation and relevant Best Practice Guidelines:

Waste Management Acts 1996

Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)

Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)

Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006.

EPA “Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019

The **Objective of this Waste Management Plan** is to minimise the quantity of waste generated by construction activities, to maximise the use of materials in an efficient manner and to maximise the segregation of construction waste materials on-site to produce uncontaminated waste streams for off-site recycling.

The Waste Management Plan shall be implemented throughout the construction phase of the development to ensure the following:

- That all site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- To ensure that all waste materials are segregated into different waste fractions and stored on-site in a managed and dedicated waste storage area.

- To ensure that all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the Waste Management Act 1996 and all associated Waste Management Regulations.

2.0 DESCRIPTION OF PROPOSED DEVELOPMENT SITE ACTIVITIES

The range of development works to which this Construction Waste Management Plan will be integrated into the construction phase of the site are summarised as follows:

- Ground preparation works
- Development of site infrastructure
- Road Infrastructure works
- Construction of buildings and hardstanding areas
- Landscaping of entire site including open soft landscaped areas

3.0 PRINCIPALS OF THE CONSTRUCTION WASTE MANAGEMENT PLAN

Waste materials generated by construction activities will be managed according to the Department of the Environment, Heritage and Local Government's 2006 Publication - *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*.

The Waste Management Plan specifically addresses the following points:

- Analysis of waste arisings / material surpluses
- Specific Waste Management objectives for the Project including the potential to re-use existing on-site materials for further use in the construction phase.
- Methods proposed for Prevention, Reuse and Recycling
- Waste Handling Procedures
- Waste Storage Procedures
- Waste Disposal Procedures
- Waste Auditing
- Record Keeping

3.1 Waste Minimisation

Waste minimisation and prevention shall be the primary responsibilities of the Construction Project Manager who shall ensure the following:

- Materials will be ordered on an “as needed” basis to prevent over supply
- Materials shall be correctly stored and handled to minimise the generation of damaged materials
- Materials shall be ordered in appropriate sequence to minimise materials stored on site
- All staff and Sub contractors shall be advised through tool box talks on how to dispose of their waste correctly on-site.

3.2 Construction Waste Reduction

It is proposed that the Construction Manager as part of regular site inspection audits will determine the effectiveness of the waste management statement and will assist the project manager in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

4.0 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

- It is proposed that from the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the active construction phase of the development site.
- Spill kits shall be located within the site compound with clearly labelled instructions on how they shall be used to clean up fuel/oil spills.
- All vehicle and plant oils and liquid construction materials shall be stored in impermeable storage units.
- All diesel powered generators shall be inspected on at least a weekly basis by a delegate of the project manager to ensure it is not leaking diesel or oils.
- All empty containers containing residual quantities of oils, greases and hydrocarbon based liquids shall be stored in a dedicated bunded receptacle.
- In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the site construction manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.
- It will be the responsibility of the Construction Project Manager to ensure that a written record of all quantities and natures of wastes exported off-site are maintained on-site in a Waste File at the Project office.

- It is the responsibility of the Project Manager or his/her delegate that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations:

Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)
Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)

Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) Amendment Regulations S.I.86 of 2008.

- Typical Waste materials that are to be generated or anticipated to be generated by construction works are classified as follows under *Section 17 Construction and Demolition Wastes* of the European Waste Catalogue (EWC) as detailed in Table 1.
- It is proposed that waste materials will be collected and stored in separate clearly labelled skips in a predefined waste storage area in the site compound and that these materials will be collected by a Permitted Waste Contractor holding an appropriate Waste Collection permit in compliance with *Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)* and *Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)* and that they will be sent for disposal or further processing to appropriately Permitted / Licensed Waste Facilities in compliance with *Waste Management (Facility Permit and Registration) Regulations S.I. No. 821 of 2007* and *the Waste Management (Facility Permit and Registration) Amendment Regulations S.I. No. 86 of 2008*.
- Prior to the commencement of the Project, the Construction / Project Manager shall identify a permitted Waste Contractor who shall be employed to collect and dispose of all inert and hazardous wastes arising from the project works. In addition, the Construction / Project Manager shall identify all waste licensed / permitted facilities that will accept all expected waste exported off-site and will maintain copies of all relevant Waste Permits / Licences as required.
- All waste soils prior to being exported off-site, shall be classified as inert, non-hazardous or hazardous in accordance with the *EPA's Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* document dated 1st June 2015 to ensure that the waste material is transferred by an appropriately permitted waste collection permit holder and brought to an appropriately permitted or licensed waste facility.

Figure 1 Waste segregation skips



Figure 2 Spill Kit



Figure 3 Bund for waste oil container storage



5.0 DESCRIPTION OF SITE ACTIVITIES & WASTE ARISING

The development of the subject site will require the stripping of top and sub soils and the excavation of ground to basement level. The range of works required for the Construction Phase are summarised in Table 1. The expected construction and demolition waste that will be generated throughout the course of the development are described in Tables 2 - 4 below.

Table 1 Sequence of Construction & Demolition Works

Activity Sequence	General Description
Identification of Existing Utility Services	Set up bunting, mark location of live services, including E.S.B., Gas etc.
Removal of Vegetation	e.g. Trees and vegetation
Site preparation	Soil stripping, stockpiling and export
Transport of material off site	Segregation of materials on site
Substructure	Rebar, Formwork and Pour, Foundations
Superstructure	Rebar, Formwork and Pour, Blockwork
Roof	Rebar, Formwork and Pour and Waterproof
External Envelope	Place façade to superstructure
Internal Finishes	Mechanical & Electrical etc.
External Landscaping	Hard and soft landscaping

Table 2 Typical Construction Waste Composition

Description of Waste	%
Mixed Construction & Demolition Waste	33
Wood	28
Plasterboard (Gypsum materials)	10
Ferrous Metals	8
Concrete	6
Mixed other wastes	15
<i>Total</i>	<i>100</i>

Table 3 Typical Construction Waste Types

Description of Waste	Corresponding LoW Code
Concrete, Bricks, Tiles and Ceramics	17 01
Concrete	17 01 01
Bricks	17 01 02
Tiles and Ceramics	17 01 03
Mixture of concrete, bricks tiles & ceramics	17 01 07
Wood, Glass and Plastic	17 02
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and products	17 03 01*
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02
Metals (including their alloys)	17 04
Copper, Bronze, Brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and Steel	17 04 05
Tin	17 04 06
Mixed Metals	17 04 07
Insulation and Construction Materials	17 06 04
Construction materials containing Asbestos	17 06 05*
Gypsum based construction material	17 08 02
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04
Sewage Screenings	19 08 01
Paper and Cardboard	20 01 01
Wood other than that mentioned in 20 01 37	20.01 38
Soil and Stones	20 02 02
Mixed Municipal Waste	20 03 01
Hydraulic oils	13 01 01*
Fuel oils and diesel	13 07 01*

Table 4 Predicted Waste Generation

Waste Type	Predicted tonnage to be produced	Re-Use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Mixed C&D	1250	125	10	1000	80	125	10
Timber	1000	400	40	550	55	50	5
Plasterboard	500	150	30	300	60	50	10
Metals	250	12.5	5	225	90	12.5	5
Concrete	200	60	30	130	65	10	5
Mixed waste	800	160	20	480	60	160	20
Total	4000	907.5		2685		407.5	

The construction phase of the development will require the excavation of c.47,000m³ of soils.

6.0 ON-SITE WASTE REDUCTION REUSE RECYCLING AND MANAGEMENT

Construction waste material such as damaged or broken concrete slabs, blocks, bricks and tiles generated that is deemed by the Project Engineer to be suitable for reuse on the Project site for ground-fill material will be processed if necessary by on-site mobile crushing plant. This initiative shall provide a positive environmental impact to the construction phase as follows:

- Reduction in the requirement for virgin aggregate materials from quarries
- Reduction in energy required to extract, process and transport virgin aggregates
- Reduced HGV movements associated with the delivery of imported aggregates to the site
- Reduced noise levels associated with reduced HGV movements
- Reduction in the amount of landfill space required to accept C&D waste

Waste Soils & Stones Export & Article 27 Declarations

Top and subsoils will be characterised as being inert, non-inert or hazardous in accordance with *Landfill Directive (2003/33/EC)* by conducting site investigations. The classification of the soils shall be established by Waste Acceptance Criteria testing.

Excavated rock, soils and stones shall be removed off-site throughout the development and exported by an appropriately permitted haulage contractor to an appropriately permitted/licenced waste acceptance facility.

The Construction Project Manager shall inform the Local Authority of the waste facilities to which inert and hazardous soils and the volumes of which shall be exported to.

Excavated excess soils that are required to be exported off-site shall be tested to determine their classification as hazardous or non-hazardous in accordance with EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous. Non-Hazardous soils may be suitable for re-use in other construction sites and may be declared as a by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011*. Article 27 requires that the material classified not a waste but a by-product must meet specific criteria and that that a declaration of a material as a by-product is notified to the EPA. The EPA publication *“Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019* shall be considered in this regard. Appendix I presents the schematic process by which a material is determined as a waste or a by-product.

The records of all WAC tests shall be maintained in the site’s Waste File including the destination of the facility that contaminated soils are exported to and the details of the permitted haulier’s Waste Collection Permit.

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File.

Inert Wastes

The waste material generated by site construction works will be mixed Construction & Demolition (C&D) waste, comprising of soil and stone, concrete, tiles, ceramics, and bricks. Material may be processed on site if necessary using an on-site crusher unit, which will process fill material into suitable size classes for the reuse as on-site construction materials. Mixed C&D waste with large non-uniform stone or compacted soils may be passed through a mobile crusher unit which will render the material into a uniform shape and size which will allow for improved backfilling and compaction to required engineering standards.

All wood waste generated by site works shall be segregated as re-useable wood and scrap wood waste and stored in a clearly labelled dedicated skip in the waste storage area.

All plastic waste shall be stored in a dedicated, clearly labelled skip in the waste storage area.

Metals shall be segregated into ferrous and non-ferrous streams and shall stored in clearly labelled skips in the waste storage area.

Hazardous Wastes

The management of all hazardous waste arisings if they occur, shall be coordinated in liaison with Health and Safety Management.

Hazardous wastes such as waste oils and construction liquids shall be stored in dedicated clearly labelled impermeable containers.

Contaminated Soil

Where contaminated soils/materials are discovered or occur as a result of accidental spillages of oils or fuels during the construction phase, these areas of ground will be isolated and tested in accordance with the *2002 Landfill Directive (2003/33/EC)* for contamination, and pending the results of laboratory WAC testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Invasive Species

An ecological assessment of the site conducted as part of the EIAR did not identify the presence of any invasive plant species, particularly Japanese knotweed (*Fallopia japonica*) & Giant Hogweed (*Heracleum mantegazzianum*).

7.0 RECORD KEEPING

It is the responsibility of the Construction Project Manager or his/her delegate that a written record of all quantities and natures of all wastes reused / recycled and exported off-site and Article 27 declarations during the project are maintained in a Waste File at the Project office.

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description.
- Volume of waste collected.
- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number.
- Destination of waste load including Waste Permit / Licence number of facility.
- Description of how waste at facility shall be treated i.e. disposal / recovery / export
- Details of all Article 27 declarations

The waste records shall be issued to the Local Authority as required / requested.

Where practicable, a computerised monitoring tool may be employed. This system will enable the Contractor to measure and record the quantity of waste generated, and

identify possible savings on wastage. Thus, each consignment of construction waste taken from site will be subject to documentation and recording.

Verifiable and validated tracking and authorisation documentation will be maintained for all wastes destined for re-use, recovery, recycling or disposal. Justification will also be provided where a disposal option had been employed.

In addition a record will be kept of all materials as they arrive on site detailing the assignment of specific uses within the works. This will enable the monitoring of the quantity and type of waste produced at various stages throughout the project.

8.0 WASTE MANAGEMENT AUDITING

The effectiveness of the Construction Waste Management Plan and its implementation, will be subject to regular audits by the C&D Waste Officer throughout the duration of the project in accordance with the Audit Plan (to be developed during the works).

The regular audits shall focus on materials inputs to the project and the waste outputs for each operation identifying additional opportunities for waste reduction, re-use and recycling.

The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

Performance targets will be developed, e.g. an 85% overall recycling target, successes and failures will be recorded and Action Plans will be developed to address any issue which arise.

Inspections of the waste storage areas will be undertaken on a weekly basis, issues relating to housekeeping, inappropriate storage and / or segregation will be actioned at the earliest practicable opportunity.

The Construction Project Manager will record the findings of the audits, including waste types identified, quantities of waste arising, final treatments and cost, in a report to be available to the Local Authority as required during the course of the works.

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 the Final Waste Audit, which will identify the amount, nature and composition of the waste generated on the site.

The Final 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 measure waste quantities will be used to qualify 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.

Appendix I

Decision tree for determining whether a material is a by-product

